

Department of Energy (DOE)

FY 2008 Report to Congress



**Laboratory Directed Research and Development
(LDRD) at the DOE National Laboratories**
(Report also available at <http://www.mbe.doe.gov/cf1-2/ldrd.htm>)

March 2009

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FY 2008
LDRD Report to Congress
Executive Summary

The Laboratory Directed Research and Development (LDRD) program at the Department of Energy's (DOE's) national laboratories, as well as analogous programs at the Department's plants and at the Nevada Test Site, are Congressionally authorized programs designed to build capability to maintain the vitality of these nationally important institutions. This document fulfills all Congressionally requested LDRD program reporting requirements.

Overall, the national laboratories included in this report devoted approximately \$513 million to LDRD, addressing topics that span the entire range of DOE's broad scientific mandate. In addition, the production plants invested approximately \$25 million through the Plant Directed Research and Development (PDRD) program to fund science and technology projects with the potential to enhance the plants' mission-related manufacturing capabilities, operations, and core technical competencies. Also, the Nevada Test Site invested approximately \$5 million through its Site Directed Research and Development (SDRD) Program. Table 1 provides a breakdown of the three elements.

Table 1. FY 2008 LDRD/PDRD/SDRD Breakdown

	LDRD	PDRD	SDRD	Combined
Total # of Projects	1,707	145	55	1,907
Total \$ Value of Projects Reported ¹	\$508.6M	\$23.6M	\$4.6M	\$536.8M

Based on the analysis and review (discussed in Section 2.1.3 of this report) of total FY 2008 LDRD funding of \$513 million, \$354 million of FY 2008 LDRD investments were made in projects expected to benefit the defense and national security missions. In addition, FY 2008 investments totaling \$445 million were made in projects expected to benefit non-defense customer mission areas, and \$200 million in projects expected to benefit Department of Homeland Security (DHS) programs.

¹ These numbers do not reflect program administrative costs.

In response to the fiscal year (FY) 2002 Energy and Water Development Appropriations Conference Report, the Secretary issued guidance requiring all LDRD laboratories to notify other Federal agencies concerning LDRD charges. With the creation of the DHS, there are additional provisions for the notification of LDRD charges, as well as requirements for acknowledgements regarding the benefits of LDRD, prior to final approval of all DHS projects (see Section 2.3). Collectively these policies provide the basis for the Secretary's affirmation that all FY 2008 LDRD activities derived from funds of other Federal agencies have been conducted in a manner that supports the science and technology development that benefits the programs of the sponsoring agencies and are consistent with the appropriations acts providing funds to those agencies. That requested affirmation is included as Appendix 1.

An important component of the LDRD program's contribution to the laboratories' future is its ability to attract promising young scientists and engineers to the institutions. LDRD-funded post-doctoral appointments, for example, supported about 37 percent of all post-doctoral scientists and engineers at the reporting national laboratories in FY 2008.

In addition, graduate students participate in some LDRD projects, and the LDRD program provides a mechanism for scientists and engineers at the laboratories to keep themselves current in their fields.

The Department has concluded that the LDRD program helps to maintain the vitality of the laboratories that support the Department's missions and national needs. We have and will continue to carefully review the management and administrative procedures and funding levels at each of the relevant laboratories.

FY 2008 LDRD Report to Congress

1. Introduction

1.1 Background

Pursuant to statutory authorizations, the DOE national laboratories and manufacturing plants, and the Nevada Test Site (NTS), operate research and development programs using a portion of their overall budgets for the purpose of investing in future capabilities. This document reports on these programs for FY 2008.

LDRD, the first of these programs, was implemented at the DOE national laboratories to formalize what had been a long-standing practice, authorized by legislation, to use a percentage of the laboratory's total budget for critical research and development efforts that the laboratory determined to be important.

Within the overall context of maintaining the vitality of the laboratories, the specific purpose of the LDRD program is to provide the DOE laboratories with the opportunity and flexibility to undertake overhead-funded research and development activities to:

- (1) pursue new and innovative scientific and technological ideas;
- (2) enhance the scientific and technological vitality of the institution;
- (3) manage strategic direction; and
- (4) develop and retain new workforce capabilities.

DOE policy provides guidance to ensure effective management and oversight of the LDRD program while supporting the laboratories' abilities to pursue innovative self-selected projects with the concurrence of the DOE/NNSA. The process is consistent with DOE's management philosophy for all research and development activities, and it includes annual planning and reporting documents as well as program and peer reviews.

1.2 Purpose of the Report

Formally, this report responds to the Conference Report (H.R. Report No. 106-988) accompanying the Energy and Water Development Appropriations Act, 2001, which requested DOE's Chief Financial Officer "to develop and execute a financial accounting report of LDRD expenditures by laboratory and weapons production plant." It also responds to the Conference Report (H.R. Report No. 107-258) accompanying the Energy and Water Development Appropriations Act, 2002, which requested the Secretary of Energy to include in the annual report to Congress an affirmation that all LDRD activities derived from funds of other agencies have been conducted in a manner that supports science and technology development that benefits

the programs of the sponsoring agencies and is consistent with the appropriation acts that provided funds to those agencies. Such an affirmation is included in Appendix 1 of this report.

Further, this report addresses Section 3136(b)(1) of the National Defense Authorization Act for Fiscal Year 1997 (Public Law 104-201), which requires submission each year of “a report on the funds expended during the preceding fiscal year on activities under [the LDRD Program] to permit an assessment of the extent to which such activities support the national security mission of the Department of Energy.” Based on the analysis and review (discussed in Section 2.1.3 of this report) of total FY 2008 LDRD funding of \$513 million, \$354 million of FY 2008 LDRD investments were made in projects expected to benefit the defense and national security missions.

This report addresses what research and development activities the funding supports, and why the program is important to DOE and the laboratories. The national laboratories organize their respective programs according to their individual needs; however, the LDRD program does have a common administrative approach consistent with the statutory authorizations and Departmental guidelines.

This report describes the LDRD program and its implementation at the various DOE national laboratories. Newer, analogous programs implemented at the Nevada Test Site and at the manufacturing plants are summarized in Sections 3.1 and 3.2 of this report. They are authorized under separate legislation. The Plant Directed Research, Development and Demonstration (PDRD) Site-Programs are consistent with the statutory authorizations found as stated in the Energy and Water Development Appropriations Act, 2001 (Section 310) and the Defense Authorization Act for Fiscal Year 2001 (Section 3156) at the following sites:

- The Kansas City Plant, Kansas City, Missouri;
- The Y-12 Plant, Oak Ridge, Tennessee;
- The Pantex Plant, Amarillo, Texas; and
- The Savannah River Plant, Aiken, South Carolina.

The Site Directed Research, Development and Demonstration (SDRD) program is consistent with the statutory authorizations found in Section 310 of Energy and Water Development Appropriations Act, 2002, which authorizes a program for directed research and development at the NTS.

Section 311 of the Energy and Water Development Appropriations Act, 2006, Public Law 109-103, raised the maximum LDRD funding level to 8 percent and the PDRD and SDRD funding level to 3 percent and makes all the DOE labs eligible for LDRD funding. It also applies overhead costs to LDRD, PDRD, and SDRD.

Section 309 of the Consolidated Appropriations Act, 2008, Public Law 110-161, allows the maximum PDRD and SDRD funding level to be 4 percent.

In FY 2007, the Savannah River National Laboratory (SRNL), the National Renewable Energy Laboratory (NREL), and the Princeton Plasma Physics Laboratory (PPPL) initiated LDRD programs based on this legislation.

2. FY 2008 LDRD Program

2.1 Financial Information

2.1.1 LDRD Funding Mechanism

The LDRD program is structured to pursue innovative and creative science and technology, often with an emphasis on projects that will contribute to the needs of multiple programs and Federal agencies. The Department views LDRD as a legitimate cost of doing business for all sponsors at the laboratories and all sponsors are charged the same rate for LDRD at the laboratory.

Therefore, to ensure that all users of the laboratories support their fair share of LDRD, the costs are funded as part of laboratory indirect costs, up to a maximum of 8 percent of operating and capital equipment costs, and are treated as normal costs of doing business. As such, all organizations that fund programs at laboratories also fund LDRD activities. The capabilities developed and maintained through LDRD, in turn, may benefit all laboratory customers. This combination of equitable treatment of laboratory sponsors and multiple benefits derived from LDRD is achievable through the indirect cost funding mechanism for LDRD.

The pricing policy of DOE is full cost, which includes all direct costs incurred in performing the work, any other allocable costs incurred by the laboratory in performing the work, and a Federal administrative charge of 3 percent, as appropriate, of these costs for non-DOE sponsors. LDRD charges and assessments on Work for Others (WFO) agreements are discussed in more detail in Section 2.3. LDRD is considered an allocable cost in accordance with the terms of the laboratory management and operating contracts and is identified in the laboratory accounting systems. As stated above, LDRD charges are currently treated as indirect costs. As such, they are allocated and reported in the cost of a laboratory's programmatic work (for both DOE programs and Work for Others).

2.1.2 FY 2008 Expenditures

For FY 2008, the national laboratories devoted approximately \$513 million to LDRD. Table 2 shows the LDRD costs by site for FY 2008. For more details on the individual projects conducted at each site, see Appendix 2.

Table 2. FY 2008 overall laboratory costs and LDRD costs at DOE laboratories.

Laboratory	# of LDRD Projects	LDRD Costs¹ (\$M)	Total Laboratory Costs (\$M)	LDRD as a % of Total Cost²
Argonne National Lab	144	27.9	562.9	4.95%
Brookhaven National Lab	69	12.0	476.9	2.52%
Idaho National Lab	103	24.3	798.4	3.05%
Lawrence Berkeley National Lab	84	18.3	573.9	3.19%
Lawrence Livermore National Lab	176	91.5	1,537.7	5.95%
Los Alamos National Lab	281	124.7	1,926.9	6.47%
National Renewable Energy Lab	39	5.2	241.2	2.17%
Oak Ridge National Lab	152	28.9	1,192.1	2.42%
Pacific Northwest National Lab	188	27.4	768.0	3.56%
Princeton Plasma Physics Lab	9	0.8	78.9	1.05%
Sandia National Lab	421	149.2	2,207.7	6.76%
Savannah River National Lab	41	2.7	136.7	1.94%
Total	1,707	512.9	10,501.3	4.88%

2.1.3 FY 2008 LDRD Allocation Percentages

Departmental policy states that the maximum funding level established for LDRD must not exceed 8 percent of the laboratory's total operating and capital equipment budgets, including non-DOE funded work, for the year. It is important to note that individual LDRD program estimates at each site are approved based on laboratory estimated budgets for the fiscal year. Initial planning bases are derived from funds anticipated. The final percentage calculation is based on actual LDRD costs and actual operating and capital equipment costs. Table 2 above

¹ Amounts for Total "LDRD Costs" by laboratory in Table 2 may vary slightly from the total LDRD project costs by laboratory included in Appendix 3 due to the inclusion of LDRD program administrative costs in Table 2 amounts.

² Percentage calculations based on unrounded numbers.

includes the FY 2008 end-of-year information.

In addition, an analysis of the FY 2008 LDRD program was conducted as it relates to funding received from both defense and non-defense sources (including DOE and WFO sponsors) and the benefits from the dollars invested by those sources in the LDRD program. This analysis also includes data related to the DHS.

The total FY 2008 funding for the LDRD program conducted at the laboratories was approximately \$513 million, which represents almost 5 percent of total laboratory costs at these laboratories. Of this amount, \$333 million was provided by defense customers, \$158 million by non-defense customers, and \$22 million by DHS. A review of the LDRD program funding shows that about \$354 million supports projects that will be expected to benefit the defense and national security missions, \$445 million supports projects that will be expected to benefit nondefense customer mission areas, and \$200 million supports projects that will be expected to benefit DHS programs. This review was based on an assessment of each LDRD project in relation to the likely missions that will be expected to benefit.

In assessing the return on the dollars invested in LDRD, it is essential to understand that the vast majority of research and development activities have application to national needs in defense, non-defense and DHS missions. That is, as the numbers above indicate, many of the LDRD projects are put in more than one category since they support fundamental research and can be expected to benefit defense, non-defense and DHS missions. This leveraging of the research capabilities of the DOE's laboratories is one of the great benefits of the LDRD program and its focus on the long-term vitality of the laboratories.

2.2 Workforce Development

Maintaining the vitality of the DOE national laboratories—the overarching theme of the LDRD program—implies a responsibility not only for future-looking research and development but also for the workforce of the future. For the laboratories to be poised to tackle problems confronting DOE and the Nation, they require more than facilities and infrastructure. Scientists and engineers must also be available to implement the capabilities of the laboratories.

Post-doctoral appointments offer the single largest source of new scientific and engineering talent for the DOE laboratories and are therefore deemed to be critical to maintaining institutional vitality. The LDRD program plays a central role in the various post-doctoral programs at all of the laboratories, as shown in Table 3, but especially at the national security laboratories.

Table 3. Post-Docs supported by LDRD at the DOE Laboratories in FY 2008.

Laboratory	Total Post-Docs	Post-Docs Supported by LDRD	% Supported By LDRD
Argonne National Lab	227	107	47%
Brookhaven National Lab	205	48	23%
Idaho National Lab	25	12	48%
Los Alamos National Lab	342	212	62%
Lawrence Berkeley National Lab	322	56	17%
Lawrence Livermore National Lab	119	89	75%
National Renewable Energy Lab	126	13	10%
Oak Ridge National Lab	318	69	22%
Princeton Plasma Physics Lab	4	2	50%
Pacific Northwest National Lab	141	50	35%
Sandia National Lab	168	93	55%
Savannah River National Lab	12	2	17%
Total	2,009	753	37%

In addition to this formal participation in post-doctoral programs, the LDRD program also supports a wide range of activities that enhance the laboratories workforce development. These include support for both undergraduate and graduate students working on LDRD projects, reputation building by providing laboratory visibility in a wider range of publication venues than would be the case without the results of LDRD, technical staff retention associated with opportunities to retain and hone scientific skills via LDRD, and a range of university collaborations stimulated via LDRD projects.

2.3 LDRD and the Work for Others Program

One of the features of the DOE national laboratories is the application of science and technology to a broad range of national security and science missions through the DOE WFO program.

All WFO sponsors appear to benefit from the science and technology innovations provided by LDRD. The Department views LDRD as a legitimate cost of doing business for all programs at the laboratories. Therefore, to ensure that all users of the laboratories support their fair share of LDRD innovations, the cost is included as an allocable cost.

WFO programs are possible because the laboratories have developed research and development capabilities in a wide range of areas of relevance to organizations other than DOE. WFO customers seek out these capabilities and, in many cases, initiate WFO research and development at the laboratories. WFO research broadens the base of innovation at the DOE laboratories and increases the number of potential solutions to national challenges, including threats to national security. The laboratories' research results are enhanced by the cross-pollination of technologies developed in conjunction with its WFO partners.

In this regard, Congress provided language in the Conference Report accompanying the Energy and Water Development Appropriations Act, 2002, that requested the Department notify other Federal agencies that a portion of the funds collected through the WFO program will be used to fund LDRD projects. In addition, with the creation of the DHS, Congress enacted analogous requirements that LDRD funding associated with DHS programs be used to support DHS missions. As noted earlier, the Conference Report also requested the Secretary affirm that all LDRD activities derived from funds of other agencies have been conducted in a manner that supports science and technology development that benefits the programs of the sponsoring agencies and is consistent with the appropriations acts that provided funds to those agencies.

In response to the FY 2002 Conference Report, the Secretary issued guidance requiring all LDRD laboratories to notify other Federal agencies concerning LDRD charges prior to funding work at the laboratory. Specifically, each new and/or revised WFO proposal provided to a Federal agency must indicate the amount of LDRD charges that will be collected. Furthermore, the proposal notifies the sponsor that, by providing funding, the agency is acknowledging that LDRD activities are beneficial to their organization and consistent with appropriation acts providing funds to that agency. Subsequently, each WFO funding acceptance document also includes the LDRD estimate acknowledgement.

In February of 2003, the Secretary of Energy and the Secretary of Homeland Security entered into a Memorandum of Agreement to implement key provisions of the Homeland Security Act. In addition, the Deputy Secretary of Energy issued a DOE Notice on *Reimbursable Work for the Department of Homeland Security*. The purpose of that document was to provide information on the process by which the DHS may place orders for reimbursable work activities to be performed at the DOE laboratories. Within that Notice, there are provisions for the notification of LDRD charges in the cost proposal as well as requirements for acknowledgements regarding the benefits of LDRD prior to final approval. On August 17, 2006, the Secretary of Energy issued DOE Order 484.1 to update the DOE Notice.

These policies have been implemented and provide a basis for the Secretary to affirm that the LDRD program is managed in accordance with the Congressional requests cited above.

The Secretarial affirmation is included as Appendix 1. In December of 2003, the DOE Acting Chief Financial Officer transmitted applicable guidance and policy to reiterate the process to other Federal agency Chief Financial Officers who are customers and sponsors of work at the Department's laboratories.

3. FY 2008 PDRD and SDRD Programs

Plant Directed Research and Development

Fiscal Year 2008 PDRD Expenditures

Section 309 of H.R. 2764, Consolidated Appropriations Act, 2008, Public Law 110-161 enabled the Secretary of Energy to authorize an amount not to exceed four percent for PDRD. The following table shows FY 2008 PDRD expenditures by site. It should be noted that the table includes all PDRD costs including individual project costs listed in Appendix 2 and any administrative costs not specifically assigned to individual FY 2008 projects, if applicable.

Plant	# of PDRD Projects	PDRD Costs¹ (\$M)	Total Plant Cost (\$M)	PDRD as a % of Total Cost²
Kansas City	40	3.9	336.7	1.16%
Pantex	10	1.3	685.7	0.19%
Savannah River	16	1.6	138.4	1.15%
Y-12	79	18.3	693.8	2.64%
Total	145	25.1	1,854.6	1.35%

3.2 Site Directed Research and Development

Fiscal Year 2008 SDRD Program Expenditures

Section 309 of H.R. 2764, Consolidated Appropriations Act, 2008, Public Law 110-161, enabled the Secretary of Energy to authorize an amount not to exceed four percent for SDRD. The following table shows FY 2008 SDRD program expenditures. It should be noted that the table includes all SDRD costs including individual project costs and any administrative costs not specifically assigned to individual FY 2008 projects.

Site	# of SDRD Projects	SDRD Costs¹ (\$M)	Total Site Cost (\$M)	SDRD as a % of Total Cost²
Nevada Test Site	55	5.2	270.3	1.91%

¹ Amounts for Total "PDRD/SDRD Costs" may vary slightly from the total PDRD/SDRD project costs by site included in Appendix 3 due to the inclusion of PDRD/SDRD program administrative costs.

² Percentage calculations based on unrounded numbers.

4. Report Conclusions

The DOE LDRD program offers a flexible mechanism by which the national laboratories maintain their vitality and, in the process, prepare themselves to help address the Nation's future scientific and engineering challenges. In FY 2008, the national laboratories devoted approximately \$513 million to LDRD. LDRD projects address topics that span the entire range of DOE's mission areas.

In addition, the production plants invested approximately \$25 million through the Plant Directed Research and Development (PDRD) program to fund projects that emphasized science and technology with the potential to enhance the plants' mission-related manufacturing capabilities, operations, and core technical competencies and the Nevada Test Site invested approximately \$5 million through the Site Directed Research and Development (SDRD) Program.

Based on the analysis and review (discussed in Section 2.1.3 of this report) of total FY 2008 LDRD funding of \$513 million, \$354 million of FY 2008 LDRD investments were made in projects expected to benefit the defense and national security missions. In addition, FY 2008 investments totaling \$445 million were made in projects expected to benefit non-defense customer mission areas, and \$200 million in projects expected to benefit DHS programs. The Department also affirms that all FY 2008 LDRD activities derived from funds of other Federal agencies have been conducted in a manner that supports science and technology development that benefits the programs of the sponsoring agencies and is consistent with the appropriations acts providing funds to those agencies.

An important component of the contribution of the program to the laboratories' future is their ability to attract promising young scientists and engineers to the institutions. LDRD funded post-doctoral appointments, for example, supported about 37 percent of all post-doctoral scientists and engineers at the national laboratories in FY 2008. In addition, many graduate students participate in LDRD projects, and the programs provide a mechanism for scientists and engineers at the laboratories to keep themselves current in their fields.

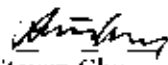
The flexibility inherent in the LDRD program is essential to maintaining the vitality of the laboratories that carry out the Department's missions and national needs. We have carefully reviewed the management and administrative procedures governing the program and monitor LDRD funding levels at each of the laboratories. This oversight is integral to maintaining a strong, credible and effective LDRD program.

Departmental Procedures

The Conference Report accompanying the Energy and Water Development Appropriations Act, 2002, requests the Secretary of Energy to include in the annual report to Congress for all Laboratory Directed Research and Development (LDRD) activities the affirmation included below. In response to and as support for the annual affirmation, the Department revised its procedures for handling LDRD program charges on other Federal agency funded Work for Others projects in fiscal year 2002. These procedures changed the Work for Others process to ensure appropriate notification of other Federal agencies as to the LDRD charges prior to funding work at the laboratory. Specifically, each new and/or revised Work for Others proposal provided to a Federal agency must indicate the amount of LDRD charges that will be collected. Furthermore, the proposal notifies the sponsor that, by providing funding, the agency is acknowledging LDRD activities are beneficial to its organization and consistent with Appropriation Acts providing funds to that agency. Subsequently, each Work for Others funding acceptance document also includes the LDRD estimate acknowledgement.

FY 2008 Secretarial Affirmation

Based on the information and acknowledgments provided to the Department of Energy and its contractors by other Federal agencies funding LDRD activities at DOE facilities, I affirm that all LDRD activities derived from funds of other Federal agencies have been conducted in a manner that supports science and technology development that benefits the programs of the sponsoring agencies and is consistent with the Appropriations Acts that provided funds to those agencies.

 _____
Steven Chu

3/16/11 _____
Date

This report responds to the following legislated reporting requirements:

**Section 3136(b)(1) of the National Defense Authorization Act for FY 1997
(Public Law 104-201)**

The Secretary of Energy shall annually submit to the congressional defense committees a report on the funds expended during the preceding fiscal year on activities under the Department of Energy Laboratory Directed Research and Development Program. The purpose of the report is to permit an assessment of the extent to which such activities support the national security mission of the Department of Energy.

**106th Congress
House of Representatives Conference Report 106-988**

The conference agreement includes an allowance of six percent for the laboratory directed research and development (LDRD) program and two percent for nuclear weapons production plants. Travel costs for LDRD are exempt from the contractor travel ceiling. The conferees direct the Department's Chief Financial Officer to develop and execute a financial accounting report of LDRD expenditures by laboratory and weapons production plant. This report due to the House and Senate Committees on Appropriations by December 31, 2000, and each year thereafter, should provide costs by personnel salaries, equipment, and travel.³ The Department should work with the Committees on the specific information to be included in the report.

**107th Congress
House of Representatives Conference Report 107-258**

The conference agreement does not include bill language proposed by either the House or the Senate regarding the Laboratory Directed Research and Development (LDRD) program. The conferees recognize the benefits of LDRD and expect LDRD activities to continue at previously authorized levels. However, when accepting funds from another federal agency that will be used for LDRD activities, the Department of Energy shall notify that agency in writing how much will be used for LDRD activities. In addition, the conferees direct the Secretary of Energy to include in the annual report to Congress on all LDRD activities an affirmation that all LDRD activities derived from funds of other agencies have been conducted in a manner that supports science and technology development that benefits the programs of the sponsoring agencies and is consistent with the Appropriations Acts that provided funds to those agencies.

³The offer to streamline the LDRD report resulted in the Department and Hill contacts agreeing not to require costs be provided by personnel salaries, equipment and travel.

108th Congress
House of Representatives 108-212

The Committee recognizes the value of conducting discretionary research at DOE's national laboratories. Such research provides valuable benefits to the Department and to other Federal agencies, and is crucial to attracting and retaining scientific talent at the laboratories. However, the Committee continues to have concerns about the financial execution of this program. One concern centers on the manner in which DOE levies the LDRD "tax" on all DOE and Work for Other programs, and then accumulates the funds into an overhead pool. This Committee typically deals with defense and non-defense allocations within the Energy and Water Development bill, and the line between those two allocations is not easily crossed. Under LDRD, however, the laboratory directors are able to pool defense and non-defense appropriations at will. The only obvious solution to this concern is to require DOE to establish and track separate LDRD accounts for defense and non-defense funding sources, and the Committee is not yet ready to direct that change.

The other principal concern deals with the application of LDRD to work being performed for other agencies (Work for Others). The conference report accompanying the Energy and Water Development Appropriations Act, 2002 (P.L. 107-66) directed the Secretary to "include in the annual report to Congress on LDRD activities an affirmation that all LDRD activities derived from funds of other agencies have been conducted in a manner that support science and technology development that benefits the programs of the sponsoring agencies and is consistent with the Appropriations Acts that provided funds to those agencies." The Department has implemented this guidance by including the following language into its standard project proposal and funding acceptance documents that it requires the funding WFO agencies to sign: "The Department of Energy believes that LDRD efforts provide opportunities in research that are instrumental in maintaining cutting edge science capabilities that benefit all of the customers at the laboratory. The Department will conclude that by providing funds to DOE to perform work, you acknowledge that such activities are beneficial to your organization and consistent with appropriations acts that provide funds to you." This is too facile a solution for the Department. According to a review conducted by this Committee's investigative staff, only a little more than half of the WFO customers indicated they could reliably certify that DOE's LDRD activities are consistent with the funding agencies' appropriations acts. Nevertheless, most agencies sign the required certification letter to DOE because they see no real alternative. The Committee fully expects that there are terms and conditions attached to the appropriations acts for these other agencies that are being ignored through this so-called "certification" process for LDRD work.

The Committee is considering changing the arrangement by which LDRD activities are funded to eliminate these concerns. The results of an ongoing General Accounting Office review will help to inform the Committee's choice. The Committee is receptive to streamlining the annual LDRD report to Congress, which is undoubtedly a significant burden for the Department to prepare and is of little value to this Committee in resolving the concerns identified above. The Department should work with Committee staff to develop a simpler and more useful LDRD report.

FY 2006 Energy and Water Development Appropriations Act, Public Law 109-103, Section 311

Of the funds made available by the Department of Energy for activities at government-owned, contractor-operator operated laboratories funded in this Act or subsequent Energy and Water Development Appropriations Acts, the Secretary may authorize a specific amount, not to exceed 8 percent of such funds, to be used by such laboratories for laboratory-directed research and development: *Provided*, That the Secretary may also authorize a specific amount not to exceed 3 percent of such funds, to be used by the plant manager of a covered nuclear weapons production plant or the manager of the Nevada Site Office for plant or site-directed research and development: *Provided further*, That notwithstanding Department of Energy order 413.2A, dated January 8, 2001, beginning in fiscal year 2006 and thereafter, all DOE laboratories may be eligible for laboratory directed research and development funding.

**109th Congress
House of Representatives Conference Report 109-275**

The conferees are concerned with the level of overhead charges applied to programs funded in this bill and urge the Department to continue to work to minimize the overhead burden on all program activities. In order to ensure an equitable allocation of overhead costs the Secretary should apply overhead charges to LDRD activities consistent with cost accounting practices applied to program activities that are direct funded. The conference agreement increases the allowable percentage for LDRD, PDRD and SDRD activities to allow this accounting change without harming the underlying discretionary research activities. The change in accounting practices should be implemented with no net reduction in LDRD levels below 6 percent of the funds provided by the Department of Energy to such labs for national security activities and 2 percent for PDRD and SDRD activities at the appropriate plants and sites. Within 90 days after the date of enactment of this Act, the Secretary of Energy shall submit a report to the Committees on Appropriations detailing how the accounting change will be implemented without impacting the basic research and the change shall be implemented within 180 days of enactment.

Section 309 of H.R. 2764, Consolidated Appropriations Act, 2008, Public Law 110-161

LABORATORY DIRECTED RESEARCH AND DEVELOPMENT. Of the funds made available by the Department of Energy for activities at government-owned, contractor-operator operated laboratories funded in this Act or subsequent Energy and Water Development Appropriations Acts, the Secretary may authorize a specific amount, not to exceed 8 percent of such funds, to be used by such laboratories for laboratory-directed research and development: *Provided*, That the Secretary may also authorize a specific amount not to exceed 4 percent of such funds, to be used by the plant manager of a covered nuclear weapons production plant or the manager of the Nevada Site Office for plant or site-directed research and development: *Provided further*, That notwithstanding Department of Energy order 413.2A, dated January 8, 2001, beginning in fiscal year 2006 and thereafter, all DOE laboratories may be eligible for laboratory directed research and development funding.

Listing of All FY 2008 LDRD, PDRD, & SDRD Projects

Some projects contain zero or negative dollars.

For those projects with a Fiscal Year Total of \$0, a number of explanations are possible.

Examples of situations that could lead to a \$0 Fiscal Year Total include the following:

1. the project was approved, but not funded due to the need to fund higher priority projects,
2. the primary investigator was reassigned,
3. the primary investigator accepted another position external to the laboratory, or
4. the required equipment/facilities were not available.

Likewise, there are a number of possible explanations for a particular project to have a negative Fiscal Year Total. One possible explanation would be due to cost corrections to inactive projects from previous Fiscal Years to incorporate accrual adjustments or adjustments for finalized overhead rates.

United States Department of Energy
Laboratory, Plant or Site Directed Research and Development Report
Project List -- Fiscal Year 2008

ANL - Argonne National Lab

Project ID	Project Name	FY Total
P/ANL2006-015	Development of a New Concept for a Solenoid Spectrometer for Nuclear Structure Studies	\$109,400
P/ANL2006-023	Ultra-Fast Phase-Enhanced X-Ray Imaging with Micrometer-Spatial and 150 Picosecond Temporal Resolutions	\$132,200
P/ANL2006-033	Quantum Wire Interconnects	\$134,500
P/ANL2006-035	Biocompatibility of Ultra-Nanocrystalline Diamond Thin Films	\$132,800
P/ANL2006-075	Large-Area Detectors with Pico-Second Time Resolution	\$69,900
P/ANL2006-088	Time-Resolved Optical Sensors for Biological Molecules with Ultra-High Sensitivity and Specificity	\$45,900
P/ANL2006-091	Adapting Photonic Concepts to THz Generation	\$114,300
P/ANL2006-118	Plasmon Scanner for High-Resolution Surface-Enhanced Raman Spectroscopy of Biological Nanosamples	\$112,800
P/ANL2006-123	International Linear Collider R&D at Argonne: The Gamma-Ray Based Positron Source and Positron Emulator Study	\$99,600
P/ANL2006-137	Plug-In Hybrid Electric (P-HEV) Vehicle Optimization	\$96,900
P/ANL2006-141	Renewable Bio-Fuel Combustion Characteristics in Automotive-Type Diesel Engines	\$89,000
P/ANL2006-145	Methodology and Model for Evaluating Advanced Energy and Environmental Technology R&D Options Considering Multiple Criteria and Multiple Perspectives under Conditions of Uncertainty	\$49,600
P/ANL2006-149	Novel Nano-Architectures for High-Efficiency Solar Cells	\$172,200
P/ANL2006-150	Design and Develop an Advanced Analysis Framework	\$298,800
P/ANL2006-151	Fungible Fuels by Bioprocessing	\$124,200
P/ANL2006-152	Conversion of Solid Carbon Feedstocks into Liquid Hydrocarbons for Transportation Fuels through Gasification	\$208,100
P/ANL2006-168	Interparticle Coupling and High Frequency Dynamic Response in Magnetic Nanocrystal Colloids and Assemblies	\$89,000
P/ANL2006-169	Nanophotonics Materials and Devices	\$48,500
P/ANL2006-170	Functionalization of Polarizable Surfaces for Nanofluidic Control	\$103,300
P/ANL2006-183	Development and Demonstration of an Omnivorous Engine	\$94,400
P/ANL2006-199	Theoretical Investigations of Atomic and Molecular Interactions with Ultrafast/Ultraintense X-Ray Radiation	\$346,700
P/ANL2006-212	Developing A Minimal-Organism Platform for Systems Biology	\$690,700

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ANL - Argonne National Lab

Project ID	Project Name	FY Total
P/ANL2006-214	Characterization of the Candidate Damping Ring Designs of the International Linear Collider	\$56,600
P/ANL2006-216	Advanced Electron Accelerator Simulation	\$102,100
P/ANL2006-223	Secure Database Access Technologies for Large-Scale Data Management	\$99,500
P/ANL2006-225	Ultimate Limit for Hard X-Ray Focusing	\$300,200
P/ANL2006-227	Toward A Model-Driven Accelerator	\$99,300
P/ANL2006-228	Gas Cell Development	\$97,500
P/ANL2006-233	Demonstrate a Heavy Ion Driver Front End	\$275,900
P/ANL2006-235	Develop Electropolishing Techniques for 1.3 GHz 9-Cell Elliptical-Cell Superconducting Cavities	\$99,300
P/ANL2006-236	Development of Diagnostics for Lithium Thin Film Strippers	\$98,100
P/ANL2006-243	Parallel Computation for Laser Plasma Interactions at Relativistic Intensities	\$125,900
P/ANL2006-246	Single-Molecule Interrogation of Photosynthetic Nano-Architectures	\$89,900
P/ANL2006-249	A Novel Hybrid Detection System for National Security to Counter Seaborne Container Terrorism	\$80,100
P/ANL2006-257	Nanoscale Studies of Metal/Oxide/Metal Tunnel Junction Structures: Development of Novel Characterization Tools	\$147,500
P/ANL2006-258	Nanoscience Theory	\$107,500
P/ANL2006-260	Advancing Nuclear Theory for a Rare Isotope Accelerator: Nuclear Structure and Reactions by Astrophysics	\$101,500
P/ANL2006-262	Nuclear Theory for Supernovae	\$232,900
P/ANL2006-263	Synthesis, Characterization, and Electrocatalytic Activity of Bimetallic Nanoclusters	\$185,200
P/ANL2006-264	Development and Applications of Theoretical and Computational Approaches for Biomolecular Systems	\$414,600
P/ANL2006-266	Undulator for the ILC Positron Source	\$79,400
P/ANL2006-268	Novel Hybrid Nanomaterials via Uniting Top-Down and Bottom-Up Assembly Methods	\$97,000
P/ANL2007-001	Electron Encapsulation: Single-Molecule Capacitors	\$49,400
P/ANL2007-007	Enzymes for Cellulosic Ethanol Production: Structure-Function Studies	\$207,700
P/ANL2007-008	Astrochemical Studies of the Origins of Life using Circularly Polarized Synchrotron Radiation	\$114,500
P/ANL2007-013	Anti-Thrombogenic Coatings for Cardiovascular Implants	\$179,100

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Project ID	Project Name	FY Total
P/ANL2007-027	Whole Cell-Based Biosensors and Bioelectronics	\$133,200
P/ANL2007-040	Evaluation of a New Tool for High-Throughput Protein Production and Purification - Elastic-Like Polypeptides	\$168,600
P/ANL2007-044	Aligned Carbon Nanotube as Pt-Free Electrode Catalyst for Fuel Cell	\$128,400
P/ANL2007-048	Engineered Biodegradable Nanospheres for Targeted Medical Therapy	\$201,900
P/ANL2007-059	Development of In Situ Non-Resonant X-Ray Scattering Technique and Its Application to Redox Reactions in Battery Materials	\$114,100
P/ANL2007-060	Microporous Filters for Hydrogen Purification	\$182,400
P/ANL2007-064	Optimizing Quantum Efficiency in Solid State Lighting Devices	\$107,700
P/ANL2007-066	Mesoscale Simulation of Bloodflow using Kinetic Theory	\$124,200
P/ANL2007-068	Sub-Millisecond Measurements of Structural Changes in Materials under Extreme Conditions	\$119,400
P/ANL2007-071	Design and Synthesis of New Nanocarbon Composites from Carbon Nanotubes and Ultrananocrystalline Diamond	\$187,900
P/ANL2007-075	Magnetically Targeted Thermal Cancer Therapy using Designer Nanospheres	\$223,000
P/ANL2007-080	Identification and Characterization of Ovarian Cancer Stem Cells Towards Ultimate Cancer Treatment	\$98,800
P/ANL2007-088	Solar Thermoelectric Energy Conversion in Nanocomposites	\$104,600
P/ANL2007-100	Transition Edge Sensors (TES)	\$794,000
P/ANL2007-105	Ion Optics of the Super Separator Spectrometer (2007 Title: Development of Concepts for a Super Separator-Spectrometer)	\$176,300
P/ANL2007-107	Development of Unique Environmental Basic Research Capabilities for Sustainable Bioenergy Research	\$97,300
P/ANL2007-110	Membrane Analysis and Simulation System (MASS)	\$317,300
P/ANL2007-113	Standoff Monitoring of Acoustic Signatures by MMW Modulated Scattering Technique	\$74,900
P/ANL2007-114	Highly Selective Catalytic Process for Producing Ethanol from Coal- or Bio-Derived Syn Gas	\$124,700
P/ANL2007-126	Synthesis and Characterization of Hybrid Diblock Copolymer Nanocomposites with Ordered Arrays of Inorganic Nanoparticles	\$286,900
P/ANL2007-132	Collection and Evaluation of Detailed Design Information on Russian Research Reactors	\$29,800
P/ANL2007-133	An Ultra-Sensitive Detection Assay Based on DNA-Modulated Enzymatic Visualization	\$119,000

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ANL - Argonne National Lab

Project ID	Project Name	FY Total
P/ANL2007-135	Development of Digital Pixel Array X-Ray Detector Technology	\$60,500
P/ANL2007-142	Second-Sound Diagnostic Thermometry for ILC Cavities	\$60,600
P/ANL2007-145	Characterization of Silicon Photomultiplier Sensors for Scientific Research Applications	\$124,500
P/ANL2007-150	Metal and Semiconductor Nanoparticle Assemblies: Controlled Quantum Coupling on the Nanometer Scale	\$98,100
P/ANL2007-154	Solarplasmonics	\$55,800
P/ANL2007-156	Rapidly Recomposable Simulations to Support Complex Adaptive System Comparative Analysis Dynamic Environment for Emerging Societies	\$148,300
P/ANL2007-157	Molecular Machines: The Visualization of Motions	\$131,900
P/ANL2007-158	An Integrated X-Ray/Neutron Approach to Magnetic Depth Profiling in Artificial Nanostructures	\$106,900
P/ANL2007-160	Fundamental Understanding Breakup Process during Injection of Alternative Fuels	\$103,100
P/ANL2007-161	Systems Biology for Enhanced Bioconversions	\$496,500
P/ANL2007-162	Metagenomics and Discovery for Biofuels	\$410,900
P/ANL2007-164	A Framework for Scalable Statistical Genomics	\$112,700
P/ANL2007-165	Real-Time Analysis of Advanced Photon Source Data	\$105,500
P/ANL2007-166	Developing Analysis Services for Petascale Computing	\$188,300
P/ANL2007-170	Understanding Synthesis of High Efficiency Solid-State Lighting Materials	\$118,000
P/ANL2007-175	Activated Carbon Nanotubes for New Nanoarchitectures	\$76,600
P/ANL2007-180	Simulations and Hardware Development for Astrophysics	\$202,400
P/ANL2007-186	Solid State Chemistry for Advanced Thermoelectric Materials	\$524,600
P/ANL2007-189	Multidisciplinary Theory Investigations	\$625,200
P/ANL2007-190	COGENT - Coherent Germanium Neutrino Technology	\$79,900
P/ANL2007-191	Science Applications of a Very Cold Neutron Source (VCNS)	\$133,100
P/ANL2008-003	Hybrid Block Copolymer-Nanocrystal Material for Efficient Photovoltaics	\$99,200
P/ANL2008-008	Automated Theoretical Chemical Kinetics	\$123,500
P/ANL2008-009	Superslick Anti-Fog Transparent Coating for Bronchoscope	\$178,100
P/ANL2008-020	A Cell-Free Approach Towards Membrane Protein Production	\$136,000
P/ANL2008-026	The Use of the Hedvall Effect to Control Catalytic Properties of Sub-Nanometer Size Magnetic Clusters	\$153,500

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Project ID	Project Name	FY Total
P/ANL2008-027	Optimal Active Thermochemical Tables	\$167,100
P/ANL2008-035	Rapid XRF Elemental Imaging for High-Throughput Identification of Metal-binding Proteins Critical to Life, Disease and Bioremediation	\$173,100
P/ANL2008-036	Systematic Analysis of the Role of Zinc in Stem Cell Plasticity and Pluripotency	\$185,200
P/ANL2008-037	Spectroscopic Diagnostics of In-Cylinder Combustion Processes at Realistic Operating Conditions using Fiber-Optic Access	\$149,200
P/ANL2008-070	Complex Dynamic Behavior Investigated with Real-Time X-Ray Photon Correlation Spectroscopy	\$143,000
P/ANL2008-071	Development of a Total Absorption Spectrometer for Advanced Fuel Cycle Applications	\$120,600
P/ANL2008-090	Selective, Efficient C-H Bond Activation of Alkanes by High Surface Area, Size Selected Noble Metal Clusters	\$129,700
P/ANL2008-098	The Structural Chemistry and Reactivity of the Transuranium Molybdates	\$113,400
P/ANL2008-118	Innovations in Advanced Simulation and Experimental Validation for Nuclear Energy Applications	\$296,400
P/ANL2008-119	Risk-Based Decision System toward Risk Excellence	\$39,400
P/ANL2008-120	Identification of Infectious and Toxin Threat Agents within 15 Minutes	\$124,700
P/ANL2008-121	Characterization of Ignition, Combustion, and Emissions for Advanced Engines and Fuels	\$651,400
P/ANL2008-122	Plasmonics-Based Methods for Fast, Selective Chemical Biological, and Explosives Detection	\$124,600
P/ANL2008-124	Stabilization of Subsurface Contaminants through Augmentation of Natural Biological and Geochemical Processes	\$449,000
P/ANL2008-128	Wide-Angle X-Ray Scattering as a Probe of Protein Structure, Dynamics and Function	\$183,000
P/ANL2008-130	Study of the Fundamental Properties of Buoyantly-Driven Turbulent Nuclear Burning in the Context of Type Ia Supernovae	\$191,600
P/ANL2008-133	Computational Cosmology	\$129,000
P/ANL2008-135	Integrating Radiatively Important Aerosols into a New ANL Socioeconomic/Gloval Change Modeling Framework	\$60,900
P/ANL2008-136	Beam Dynamics for an ERL Upgrade of the APS	\$281,500
P/ANL2008-137	Characterization of Solid Oxide Catalytic Systems	\$293,400
P/ANL2008-138	A Global Modeling Initiative for National Security Event Dynamics	\$201,700
P/ANL2008-140	Microbial Basis for Soil-Inorganic Carbon Sequestration	\$749,800

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ANL - Argonne National Lab

Project ID	Project Name	FY Total
P/ANL2008-141	Development of the Emittance Exchange Technique for Improved Accelerator Facility Performance	\$248,000
P/ANL2008-142	Exascale Agent-Based Modeling System	\$219,000
P/ANL2008-146	Oxidative Decomposition of Cellulosic Materials	\$549,000
P/ANL2008-147	Nuclear Astrophysics	\$199,100
P/ANL2008-150	Advanced Simulation of Separations	\$273,900
P/ANL2008-152	Design and Fabrication of a Model HOM-Suppressed High Beam Power CW Superconducting RF Structure and a High Performance Cryomodule for Light Source Energy Recovery Linacs	\$80,400
P/ANL2008-154	Exascale Hardware Designs	\$600,600
P/ANL2008-156	An X-Ray Free-Electron Laser Oscillator in an Energy Recovery Linac	\$348,200
P/ANL2008-157	Science and Technology for Development of High-Sensitivity Biosensors	\$99,800
P/ANL2008-159	Very High Energy Gamma-Rays: Present and Future	\$311,600
P/ANL2008-160	End-to-End Biofuels Analysis: Building Capability in HPC Socio-Economic-Environmental Modeling	\$724,600
P/ANL2008-161	Ultrafast X-Ray Tracking of Laser-Controlled Molecular Motions	\$371,200
P/ANL2008-166	Mapping Protein Binding Domain and Small Molecule Interactions	\$199,100
P/ANL2008-171	Coherent Diffraction Imaging of Nonperiodic Materials	\$493,400
P/ANL2008-172	The Next Generation of Fuel Cell Electrocatalysts: An Integrated Experiment/Theory Approach to Structure-Property-Function Relationships in Electrocatalysis	\$199,000
P/ANL2008-177	High Brightness CW Injector Technology and Design Studies for the Energy Recovery Linac	\$168,100
P/ANL2008-178	Development of Nanofabricated Superconducting RF for Improved SRF Performance	\$249,800
P/ANL2008-179	Software Infrastructure to Enable Exascale Computational Science	\$483,700
P/ANL2008-183	Novel Concepts in Streak-Camera Development and Applications	\$183,600
P/ANL2008-186	Computational Structural Mechanics within TRACC	\$149,700
P/ANL2008-188	Solar and Astrophysical MHD	\$159,100
P/ANL2008-189	Development of Methodology to Study Structure and Dynamics of Biomolecular Systems	\$207,500
P/ANL2008-190	Feasibility Studies and Pre-Conceptual Design of Continuous Wave (CW) Superconducting RF Deflecting Cavities for the Generation of Short X-ray Pulses at the Advanced Photon Source	\$42,000

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ANL - Argonne National Lab

Project ID	Project Name	FY Total
P/ANL2008-191	Inducement of Targeted Organ-Protective Cooling Using Ice Slurry Coolants	\$114,700
P/ANL2008-192	Smart polymers as molecular therapeutics and sensing agents	\$40,700
P/ANL2008-193	X-ray Studies of Catalysis	\$483,300
P/ANL2008-194	A Test of the ANL Strategy for Antibody Stability Improvement	\$148,900
P/ANL2008-195	NEMS Based Nano-sensors for Basic Science Research	\$163,000
Total # of Projects for ANL:	144	Total Cost for ANL: \$27,840,300

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BNL - Brookhaven National Lab

Project ID	Project Name	FY Total
06-004	Detector Development for Very Long Baseline Neutrino Exp.	\$97,125
06-012	Detector for High Quality Images of Electron Microscopy	\$70,813
06-017	Transmission Photocathode Development	\$66,788
06-021	Synthesis and Characterization of Band-Gap-Narrowed TiO ₂ Thin Films and Nanoparticles for Solar Energy Conversion	\$137,350
06-030	Development of Gadolinium-Loaded Liquid-Scintillators with Long-Term Chemical Stability for a New High-Precision Measurement of the Neutrino Mixing Angle, Theta-13	\$100,825
06-037	Electronic Properties of Carbon Nanotubes and Novel Multicomponent Nanomaterials	\$84,458
06-038	Growth and Characterization of CdZnTe Crystals for Improved Nuclear Radiation Detectors	\$129,948
06-046	Novel Materials for Hard X-Ray Optics	\$118,812
06-047	Nano-Crystallography of Individual Nanotubes and Nanoparticles	\$72,509
06-056	Epigenetics: Methamphetamine (MAP)-Induced Brain Dysfunction and Methylation of DNA	\$159,496
06-060	Molecular Mechanism of Chromosomal Replication Initiation in Eukaryotic System	\$106,850
06-061	Diversification of Isoflavonoid Biosynthesis	\$194,158
06-071	Development of a Cloud Condensation Nucleus Separator	\$69,217
06-092	Nanoparticle Labeled Neural Stem Cell Tracking In Vivo by Magnetic Resonance Microscopy	\$50,433
06-094	MicroCT Methods of Quantitative Adipose Imaging: Development of a Long-Term Assessment Technique for Studying Obesity in a Rodent Model	\$76,612
06-097	Photocatalytic Reduction of CO ₂ in Supercritical CO ₂	\$71,104
07-001	QCD Thermodynamics at Non-zero Temperature and Density	\$407,278
07-002	Lattice QCD Simulations on BlueGene/L	\$188,617
07-004	Proof-of-Principle Laser System for ILC Positron Source	\$139,899
07-005	Sensitive Searches for CP-Violation in Hadronic Systems	\$127,642
07-006	Feasibility and Design Studies for a Detector for e+p, e+A, p+p, p+A, and A+A Collisions at BNL	\$87,632
07-007	A Novel and Compact Muon Telescope Detector for QCD Lab	\$76,376
07-010	Design Optimization of a Reactor Neutrino Experiment	\$119,276

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BNL - Brookhaven National Lab

Project ID	Project Name	FY Total
07-019	Development of Laser beam Shaper for Low Emittance Electron Beams	\$248,235
07-023	Surface Engineered and Core-Shell Nanowires: Nanoscale Building Blocks for Third Generation Photovoltaics	\$164,803
07-025	Precision Assembly of Nano-Objects – Approaching Artificial Photosynthesis	\$133,404
07-027	Photocatalytic Carbon Dioxide Reduction to Methanol using Metal Complexes with an NADH Model Ligand	\$169,622
07-030	Structure of Mass-Size Selected Nanoparticles by Scanning Transmission Electron Microscopy	\$125,005
07-032	Synthesis of Conjugated Polymers for Fundamental Questions in Solar Energy	\$148,744
07-035	Ultra-thin Graphite Analog Compounds	\$119,786
07-036	Lipid-Coated Nanoparticles and Their Interactions with Lipid Membrane Surfaces	\$127,190
07-038	Angle-Resolved Time-of-Flight Ion Scattering Spectroscopy from MBE-Grown Oxide Thin Films Surfaces	\$201,848
07-047	Characterization of Enzymatic O-acylation to Facilitate Biomass and Bioenergy Production	\$171,145
07-048	Functional Neurochemistry	\$125,705
07-054	Miniaturized RF Coil Arrays for MicroMRI	\$120,736
07-055	Neurocomputation at BCTN: Developing Novel Computational Techniques to Study Brain Function in Health and Disease	\$149,829
07-059	A Non-Fermentation Route to Convert Biomass to Bioalcohols	\$125,870
07-062	Fate and Reactivity of Carbon Nanoparticles (CNPs) Exposed to Aqueous Environmental Conditions	\$129,231
07-073	Development of Room-temperature CdMnTe Gamma-ray Detectors	\$124,687
07-075	Developing a New Framework for Investigating Earth's Climate and Climate Change	\$123,795
07-080	A Novel Approach for Efficient Biofuel Generation	\$105,745
07-084	Investigations of Hygroscopic Growth and Phase Transitions of Atmospheric Particles by Noncontact Atomic Force Microscopy	\$80,585
07-089	Chemical Imaging of Living Cells in Real Time	\$115,131
07-090	Coherent Bragg Rod Analysis of High-Tc Superconducting Epitaxial Films	\$114,691
07-091	Development of a Planar Device Technology for Hyperpure Germanium X-ray Detectors.	\$174,048
07-096	Study of Epigenetic Mechanisms in a Model of Depression	\$340,913

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BNL - Brookhaven National Lab

Project ID	Project Name	FY Total
07-097	Polarized Electron SRF Gun	\$198,518
07-098	New Approach to H Production, Stages and Use	\$304,389
07-101	High End Scientific Computing	\$1,733,139
08-001	How Does Color Flow in a Large Nucleus: Exploring the Chromo-Dynamics of QCD through Diffractive and Jet Measurements at eRHIC	\$123,006
08-002	Strong Correlated Systems: From Graphene to Quark-Gluon Plasma	\$33,967
08-004	Getting to know Your Constituents: Studies of Partonic Matter at the EIC	\$19,688
08-005	Development of the Deuteron EDM Proposal	\$306,308
08-008	Development of Small Gap Magnets and Vacuum Chamber for eRHIC	\$119,378
08-022	Novel Methods for Microcrystal Structure Determination at NSLS and NSLS-II	\$8,722
08-025	Combined PET/MRI Multimodality Imaging Probe	\$108,709
08-028	Genomic DNA Methylation: The Epigenetic Response of Arabidopsis Thaliana Genome to Long-Term Elevated Atmospheric Temperature and CO2 in Global Warming	\$22,033
08-034	Fabry-Perot Interferometer & Hard X-ray Photoemission	\$38,309
08-037	Ultrafast Electron Diffraction for Transient Structure and Phase Transition Studies at the NSLS SDL	\$39,831
08-039	The Development of a Laser Based Photoemission Facility for Studies of Strongly Correlated Electron Systems	\$26,532
08-042	Theory of Electronic Excited States in Heterogeneous Nanosystems	\$29,645
08-043	Nanofabrication Methods Using Solution-Phase Nanomaterials	\$32,737
08-051	Identification of Organic Aerosols and Their Effects on Radiative Forcing	\$124,635
08-060	Computational Climate Science	\$185,030
08-062	A Novel Spintronic Room-Temperature High Purity Germanium X- and Gamma-Ray Spectrometer	\$116,140
08-080	Tracer Development-Improving PET and MRI Imaging	\$1,149,581
08-081	Development of MR Research at BNL	\$1,105,469
08-082	Biofuels and Nanotech for Improvement of Oil Heat Combustion Systems	\$3,690
08-083	Solar Water Splitting: Quantum Theory of Photocatalytic Processes at the Water/Semiconductor Interface	\$4,850
Total # of Projects for BNL:	69	Total Cost for BNL: \$12,028,272

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INL - Idaho National Lab

Project ID	Project Name	FY Total
AE116	Optimization of Electrorefining of Spent Nuclear Fuel Using Ultrasonic Electrode Agitation	\$84,274
AE117	Group Actinide Separation from Spent Nuclear Fuel Using a Modified Universal Solvent Extraction Process	\$155,503
AE118	Exploration of Electrolyte Complexation and Pulse Deposition for Production of Dense Uranium Rodlets	\$95,871
AE119	Multi-reactor design and analysis platform	\$418,356
AE120	Multi-physics Simulation Methods for Advanced Reactor Analysis	\$995,346
AE121	A General Framework for Simulating Fully-Coupled Mass and Energy Transport Phenomena in Nuclear Energy Systems	\$983,430
AE122	SYSTEM ANALYSIS FOR REACTOR APPLICATIONS WITH HIGH FIDELITY	\$606,936
AE123	Acquisition and Improvement of a Modern Lattice Physics Capability	\$395,356
AE124	Unified Two-phase CFD Modeling of Boiling, Cavitation, and Bubble Collapse	\$593,274
AF100	Laser Acoustic In-situ Monitoring of Nuclear Reactor Material Mechanical Properties	\$89,903
AF101	Influence of Grain Boundary Character on Microstructure and Properties of High Temperature Alloys	\$124,511
AF103	Environmental Effects on Crack Growth in High-Temperature Alloys for Advanced Energy Systems	\$185,871
AF104	Development of Advanced Burnup Measurement and Nuclear Forensics using Inductively Coupled Mass Spectroscopy (ICP-MS) Isotopics Analysis Techniques	\$309,604
AS100	Fundamental Thermodynamics of Non-Ideal Systems for Advanced Radionuclide Separations	\$370,335
AS101	Synthesis, Characterization and Testing of Dithiophosphinic Acid Derivatives	\$362,617
AS102	Utility of unusual oxidation states of americium for separations	\$121,115
AS103	Actinide IR and Raman Spectroscopy	\$167,584
AS104	The Mechanism of the Reduction of Neptunium and Technitium by Green Rusts	\$162,426
BS100	Novel Polyoxometalate Containing Membranes for PEM Fuel Cells	\$197,945
BS101	Catalytic conversion of ethanol and acetaldehyde related to combusting ethanol-blended fuels	\$205,938
BS102	A Biomimetic Approach for Fabricating Surfaces with Extreme Water Repellency	\$205,649

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INL - Idaho National Lab

Project ID	Project Name	FY Total
CA104	Microstructural Evolution During Spark Plasma Sintering of High-Temperature Fuels and Coatings	\$185,989
CA105	Suitability of Layered Basalt as Targets for Industrial Carbon Dioxide Sequestration	\$130,522
CA106	Feasibility of Using Neutron Slowing-Down-Time Spectrometer for Fast Reactor Spent Fuel Assay	\$21,690
CA107	Oxygen Permeability of Perovskite Ceramics for Energy Applications	\$39,078
CA108	Understanding Apomixis: The Basis for a Robust Trait Delivery and Containment Platform for Bioenergy Crops	\$50,012
CA109	Porosity Evolution during In Situ Oil Shale Retorting	\$10,138
CA110	Risk Assessment Tools to Evaluate Next Generation Technical System	\$24,920
CA111	Fabrication and Radiation Testing of Semiconductor Materials Useful as Photovoltaic and Nuclear Detection Devices	\$34,729
CA112	Consolidated Bioprocessing of Agricultural Wastewater Treatment and Bioenergy Production	\$44,800
CA113	Development of Microbial Fuel Cell, fueled by domestic, agricultural, and food processing wastewaters	\$38,693
CA114	Enhancement of Separation Methods in Nuclear Fuel Recycling	\$308,270
CA115	Investigation of Public Discourse Methods in Energy Policy Decision-making	\$156,216
EI101	Chemical Separations and Process Research to Enable Biorefinery Systems	\$182,366
EI102	Advanced Predictive Condition Monitoring and Control for Modern Energy Systems: Gasification-based Processes	\$391,482
EI104	CFD-Based Simulation Capability of Fischer-Tropsch Reactors and Process Equipment	\$449,511
EI105	Biomass Feedstock Assembly to Gasification Process Computational Interface Development	\$352,250
EI107	Generation and Expulsion of Hydrocarbons from Oil Shale	\$415,318
EI108	Production of SYNGAS from Biomass Using High Temperature Steam Electrolysis	\$111,088
EI109	Nuclear Pathways to Energy Security	\$111,984
FF100	The Metabolic Capabilities of Acidithiobacillus caldus, a Ubiquitous Moderately Thermophilic Acidophile	\$100,045
FF101	Innovative Applications of Dissipative Particle Dynamics	\$35,644
FF102	Ion Exchange Coatings for Analysis	\$99,548

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INL - Idaho National Lab

Project ID	Project Name	FY Total
FF103	Hybrid Welding Process	\$99,621
GB103	A Systems Biology Approach to Understanding Lignocellulose Derived Carbon Metabolism by Alicyclobacillus acidocaldarius	\$510,235
GB104	Metabolic Engineering of Alicyclobacillus acidocaldarius for Lactic Acid Production from Biomass Derived Monosaccharides	\$439,474
GS101	Reducing CBM Water Discharge Volume	\$155,508
HT113	Module-Based Gasification and Synfuels Processes Simulator	\$190,348
IC101	Exploration and Development of Automated Differential Equation-Based System Identification	\$225,819
IC102	A Toolset for Proximal Human-Robot Interaction	\$175,688
IC103	Advanced Control Strategies for HVAC Systems in Critical Building Structures	\$187,766
IC104	Haptic Interface for Robotic Arc Welding	\$231,265
IC105	Modeling Interface to Control System Designs	\$114,192
IC106	Resilient Control System Network Agents	\$70,565
NE145	On-line Symbolic Condition Monitoring of Advanced Energy Systems	\$208,583
NE146	Process Modeling of Solvent Extraction Separations for Advanced Nuclear Fuel Cycles	\$244,659
NE147	Reactivity of radiolytically produced nitrogen oxide radicals toward aromatic compounds.	\$207,613
NE148	Nuclear Powered Transportation Fuel Production	\$115,564
NE149	Modernization/Optimization of the Advanced Test Reactor's Core-Analysis Capability to Facilitate Its Operation as a National Scientific User Facility	\$191,658
NE150	Viability Evaluations of Linear Variable Differential Transformers (LVDTs) and Capacitive Micro-Machined Ultrasonic Transducers (CMUTs) for In-Pile Instrumentation	\$275,533
NE151	Investigation of the Use of Gas Tagging for Leak Detection in the ATR	\$51,478
NE152	Application of Dynamic Bayesian Networks to Ambient Intelligent Systems	\$38,486
NN100	Model-based Design and Evaluation of Advanced Safeguards and Proliferation Detection Systems	\$310,471
NN103	Realization of FTMS Potential for Accurate Measurement of Extreme Isotope Ratios	\$249,458
NN104	Development of In-situ Measurement Technology for On-line Monitoring of Actinide Concentrations in Molten Salt Electrolyte	\$255,528

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INL - Idaho National Lab

Project ID	Project Name	FY Total
NN105	Demonstration of a Proliferation Pathway in a Thorium Fuel Cycle Using Pyrochemical Processes	\$250,081
NN107	Non-proliferation Issues as Related to Advanced Fuel Cycle and Advanced Fast Reactor Development with Processing of Reactor Fuel	\$269,869
NN108	Development of a Bayesian Estimation Method for the Detection of Nuclear Proliferation	\$100,667
NN110	Chemical Signatures of Nuclear Proliferation on Particles	\$99,816
NN112	Technetium Signature Analysis	\$63,517
NN113	Active Interrogation Die-away Assay Development Program	\$307,784
NN114	135Xe recovery from the spontaneous fission of 252Cf	\$182,520
NN115	Developing a Next Generation, Risk-Informed Approach for Robust and Resilient Design Development (R2D2)	\$284,181
NS153	TeraHertz Technology Development for Standoff Detection of Explosive Materials	\$342,723
NS155	Development of Transparent Armor Ceramics	\$200,829
NS156	Taylor Cylinder Determination of Impact Material Properties	\$204,877
NS157	A Laboratory Capability To Assess Electromagnetic Susceptibility of Critical Infrastructure Elements	\$310,347
NS158	Method for Evaluating the Fragility of Critical Infrastructure Assets to Random Events	\$162,183
NS159	Fiber Optic Acoustic Perimeter Detection	\$223,194
NS160	Integration of Energy Management Systems with Real Time Digital Simulation for Power System Emulation	\$7,091
NU100	Human Performance Assessment for Technology Neutral Evaluation: Combining Virtual and Physical Testing for Design, Development and Review of Digital Control Systems and Interfaces	\$369,336
NU101	Advanced Ceramic Nuclear Fuels	\$863,525
PH101	Cognitive Network Engine and Simulation Framework, Ph.D. Candidate Proposal for Juan Deaton	\$37,695
RP110	High Temperature In-Pile Instrumentation Enhancements	\$199,442
SH100	Microstructure and Deformation Physics of Fission-Reactor Model Materials by Atomistically Informed Mesoscale Simulation	\$727,838
SH101	Structural and Electronic Properties of Surfaces and Adsorbed Metal Particles: Applications to Catalysis, Corrosion, and Radiation Effects	\$442,107
SH102	Novel Topologically Controlled Armor System	\$86,027

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INL - Idaho National Lab

Project ID	Project Name	FY Total
SH103	Adaptive Modeling of Geometrically Complex Fuel Rods with a posteriori Error Control	\$323,860
SH105	Verification and Validation Methodologies Supporting Scientific Software for the Global Nuclear Energy Partnership	\$596,053
ST123	High- and Multi-Rate Physics Modeling and Simulation	\$174,855
ST126	Robotic Awareness and Assessment for Meaningful Human-Robot Teaming	\$202,017
ST128	Modeling of Environmentally Assisted Intergranular Stress Corrosion Cracking	\$74,942
ST129	Enhanced Three-Dimensional X-ray Computed Tomography Imaging Systems and Quantitative Analysis	\$72,944
ST130	Investigation of Low Temperature Performance in Membrane Materials and Processes for Gas Separations	\$152,667
ST131	High-Performance Polymer Membranes for High Temperature Gas Separations	\$152,220
ST132	Triazine-Based CO2 Capture Agents	\$145,197
ST133	Dynamic Impact Model and Information System to support Unconventional Fuels Development	\$193,899
ST134	Near Field Impacts of In-Situ Oil Shale Development on Water Quality-	\$326,111
TM100	Computational Modeling of Catalysts for the Reduction of Sulfur Trioxide in the Sulfur-Iodine (S-I) cycle for Hydrogen Production	\$154,948
TM101	Mathematical Characterization and Synthetic Generation of Spatial Structures Across Multiple Scales Using Fractal Techniques	\$265,078
TM104	Computational Actinide Chemistry	\$166,754
TM106	Development of 3D Multiphase Flow and Reactive Transport Codes and their Applications to Reactive Flow in Porous Media and Fracture Apertures	\$222,094
TM107	Investigations of Next Generation Advanced Boron Targeting Agents for Neutron Capture Therapy	\$53,996

Total # of Projects for INL:	103	Total Cost for INL:	\$23,688,933
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KCP - Kansas City Plant

Project ID	Project Name	FY Total
KCP07101-703643	Situational Awareness	\$140,645
KCP07243-703655	Optical Transverter	\$111
KCP07286-703665	Modified Carborane Materials	\$238,624
KCP07298-703556	IVD and PVD Process Research	\$130,661
KCP07302-703677	Alternate Material for Vehicle Transport	\$119,222
KCP07410-703641	FPGA Data Acquisition	\$77,841
KCP08711-703648	Advance Radar Testing	\$76,318
KCP08713-703682	VacuFlex Network Test Adapter	\$18,383
KCP08720-703683	Advanced Radar DSP	\$168,009
KCP08724-703691	Remote Omni-Imaging Sensor	\$67,198
KCP08727-703703	MicroSpring Development	\$129,307
KCP08728-703689	RF Properties	\$131,218
KCP08729-703676	Packaging of High-Power MCM's	\$161,697
KCP08730-703690	Sugar Cube Sensor	\$60,694
KCP08732-703696	Electrical Interconnections	\$21,871
KCP08734-703716	Lifetime System Monitors	\$37,856
KCP08735-703709	GTS Valves	\$81,076
KCP08740-703695	Inert Solder Fillers	\$46,446
KCP08741-703707	Low-Power Telemetry	\$2,238
KCP08741-703717	LTCC Planar Transformer	\$140,887
KCP08742-703702	Optical Monitors for Stronglinks	\$73,891
KCP08743-703710	Fiber Laser Welds on Stainless	\$187,549
KCP08743-703720	Cylindrical Magnetron	\$156,579
KCP08745-703706	3D Lap Fillet Laser Seam Welds	\$46,219
KCP08746-703692	Thermally Managed PV Flip-Chip	\$299,218
KCP08750-703721	RF Switch Study	\$2,848
KCP08756-703728	Optical UC R&D	\$147,105
KCP08759-703723	Secure Wireless Sensor Network	\$14,267
KCP08762-703718	Chip Slappers	\$146,381

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KCP - Kansas City Plant

Project ID	Project Name	FY Total
KCP08766-703700	Efficient Power Amplifier Study	\$106,042
KCP08767-703731	MIMO JTA Communication	\$185,190
KCP08769-703685	Modular Firing Set	\$63,185
KCP08769-703736	Conformal Antenna	\$63,766
KCP08775-703688	Accelerated Computational Arch	\$79,997
KCP08781-703745	Rapid Response Technology Evaluation	\$70,945
KCP08790-703701	EV-LC Prototype Development	\$107,866
KCP08823-703739	PWA Verification	\$24,458
KCP08826-703775	Fabrication of Nano-Capacitors	\$75,207
KCP09723-703699	Enterprise Service Bus and EC2	\$56,054
KCP-8772-703727	Wireless Test Data	\$27,348
Total # of Projects for KCP:	40	Total Cost for KCP: \$3,784,417

United States Department of Energy
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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20050155DR	Rational Vaccine Design: Theory and Experimental Validation	\$689,890
LANL-20050199ER	Processing and Properties of Bulk Nanostructured Alloys	\$74,512
LANL-20050315ER	Implicit Adaptive Mesh Refinement: A Magnetohydrodynamics Application	\$91,464
LANL-20050323ER	Testing Embedded Model Assumptions of Stable Isotopic Dynamics with Continuous Sampling: Are Modelers' Assumptions of the Global Carbon Cycle Correct?	\$116,004
LANL-20050506ER	Hierarchical Assembly of Porous Materials: Obeying Bio-Inspired Allometric Scaling Laws	\$51,344
LANL-20051164DR	Nanoscale Fluctuations in Multifunctional Materials	\$271,267
LANL-20051169ER	Physics of Astrophysical Jets	\$97,066
LANL-20051222PRD3	High Energy Particles in Astrophysical Outflows	\$14,464
LANL-20051243PRD3	The Neutrino Matrix and Beyond	\$11,995
LANL-20051281PRD3	Size Effects in Nanoscale Ferroelectric Thin Films	\$61,007
LANL-20051286PRD3	A Multiscale Approach to Modeling Continental Rift Tectonics	\$56,256
LANL-20051336PRD4	Effects of Length Scale on the Fracture Behavior of Ultra High Strength Nano-composite Materials	\$24,018
LANL-20051345PRD4	Biological and Chemical Sensor Design Using Linearly-Scaled TD-DFT Methods	\$12,572
LANL-20051347PRD4	Ultrafast Dynamics of Novel Magnetic Materials by Time Domain Spectroscopy	\$36,692
LANL-20051348PRD4	Quantum Fluctuations of Event Horizons	\$74,487
LANL-20060019DR	Structure and Bonding in Actinide Oxides	\$1,566,786
LANL-20060021DR	Dynamics of the Onset of Damage in Metals under Shock Loading	\$1,604,136
LANL-20060039DR	New Approaches to Quantum Computing and the Dynamics of Quantum Phase Transitions	\$1,370,861
LANL-20060040DR	Pathogen Detection Based on Biomodulation	\$1,336,944
LANL-20060043DR	Strongly Correlated Electrons: Duality and Implications	\$1,455,704
LANL-20060046DR	Image Reconstruction with Time-Reversal Mirrors	\$870,154
LANL-20060049DR	Heavy Quarks as a Probe of a New State of Matter	\$1,958,721
LANL-20060060DR	DREAM: A Dynamic Radiation Environment Assimilation Model to Understand Acceleration, Transport, and Losses in Natural and HANE-Produced Radiation Belts	\$1,470,934
LANL-20060079DR	Science-Based Prediction and Control of Complex Manufacturing Processes	\$1,471,253

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20060081DR	Mix Processes in Inertial Confinement Fusion	\$1,583,277
LANL-20060088DR	Advanced Actinide Separations in Alkaline Media for Spent Nuclear Fuel and Defense Materials Processing	\$1,171,918
LANL-20060097DR	Biological Effects of Molecularly Engineered Nanomaterials	\$1,143,311
LANL-20060136DR	New Classes Of Materials For Gamma-Ray And Neutron Detection	\$1,505,077
LANL-20060226ER	Development of an Engineering Model for Rubber Elasticity	\$241,425
LANL-20060230ER	Nascent Protein Folding Inside the Tunnel of the Ribosome: Cotranslational Folding	\$285,264
LANL-20060253ER	Nanobiomaterials: Building New Nanoarchitectures Using Biomolecular Scaffolds	\$247,119
LANL-20060268ER	Automatic Video Analysis Integrating Depth, Shape, Texture and Color	\$291,845
LANL-20060270ER	Automated Induction of Templates for Extracting Information from Text	\$169,067
LANL-20060272ER	Monte Carlo Estimation of Eigenvalues of Ultradimensional Matrices and Continuous Operators	\$258,489
LANL-20060302ER	New Method for Complex Contingency Analysis	\$358,743
LANL-20060305ER	Energy Distributions in Granular Flows	\$270,919
LANL-20060312ER	MRI in Microtesla Magnetic Fields with Simultaneous MEG	\$325,766
LANL-20060317ER	Understanding the Process of Intercalation Using Stable Isotope Labeled Polyaromatic Hydrocarbons (PAHs) and Oligomeric DNA; the Quantitation of Weak Bonding in DNA.	\$465,165
LANL-20060318ER	Seeing Undetectable Cancers with Time-Reversed Ultrasound	\$363,619
LANL-20060321ER	Chemical Thermoacoustics	\$323,603
LANL-20060340ER	Multigene Correlations and Their Implications for Cardiovascular Disease	\$280,107
LANL-20060346ER	Development of Redox Affinity Materials for the Separation of Carbon Nanotubes into Pure Chiral Fractions	\$324,756
LANL-20060350ER	A Faster Multipole Method	\$314,459
LANL-20060357ER	The S-Process in the Sm-Eu-Gd Region - A Probe for Stellar Mixing	\$306,277
LANL-20060360ER	Quantifying the Role of the Cold Plasmasphere in the Loss of the Electron Radiation Belts	\$136,287
LANL-20060386ER	Surface Enhanced Raman (SERS) Based Flow Cytometry Detection	\$396,542
LANL-20060392ER	Processing of Ultra-High Strength Electrical Conductors using a Novel Nano-Twinned Structure	\$272,997
LANL-20060395ER	Nanocomposite Thin Films for Surface Assisted Mass Spectrometry	\$313,529

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20060399ER	Role of Electrostatic Forces in Space and Astrophysics	\$714,479
LANL-20060407ER	Detecting Spinons with the Wiedemann-Franz Law	\$321,331
LANL-20060416ER	Stabilization of Hydrogen Clathrates --- Engineering a Solution to Hydrogen Storage	\$273,151
LANL-20060437ER	Functional Proteomics Studies of Bacillus anthracis	\$282,364
LANL-20060473ER	Novel Physics Inspired Approach to Error-Correction	\$274,559
LANL-20060494ER	Amplification of Surface Plasmons by Stimulated Emission from Semiconductor Nanocrystals	\$341,949
LANL-20060495ER	Exploring the Darkness: Cosmic Voids	\$462,990
LANL-20060497ER	Use of Strain Engineering to Tune the Physical Properties of Nanoscale Metal-Oxide Films	\$278,600
LANL-20060518ER	Improved Molecular Catalysts for Water Splitting	\$308,023
LANL-20060542ER	Generation, Detection, and Manipulation of a Single Magnetic Spin	\$331,547
LANL-20060551ER	Simulation and Modeling of the Quantum Response	\$233,563
LANL-20060558ER	Quantum Nondemolition Detection of Photons	\$270,707
LANL-20060581ER	Non-blinking and Robust Quantum-Dot Fluorophores for Applications in Biology	\$305,085
LANL-20060589ER	Manipulation and Control of Electron Spins in Semiconductors with Strain Engineering	\$309,838
LANL-20060593ER	Shedding Light on the Mechanical Unfolding of Individual Proteins	\$305,830
LANL-20060607ER	Acoustic Effects on Microscopic and Core-Scale Colloid Interactions and Porous Fluid Transport	\$307,447
LANL-20060617ER	Nanoscale Textured Composite Energetic Materials	\$319,591
LANL-20060685ER	Structure and Evolution in Cosmology and Astrophysics	\$278,849
LANL-20060686ER	Complex Dynamical Climate Systems Analysis	\$673,915
LANL-20060687ER	Space Weather Processes and Mechanisms	\$552,577
LANL-20060688ER	Solid Earth Geoscience: Transient & Steady-State Earth Processes	\$404,142
LANL-20060694ER	Supersymmetry Breaking in Various Dimensions	\$181,618
LANL-20060697ER	Statistics for the Engineering and Physical Sciences	\$171,625
LANL-20060700DR	Computational Methods for Protein Function Inference	\$624,205
LANL-20061378PRD1	High P-T Synthesis of Superhard Carbon Nitride from Graphite-Like Precursors	\$81,923

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20061383PRD1	Lifting the Quantum Critical Conundrum	\$135,451
LANL-20061387PRD1	Exploring the Membrane Penetration Machinery of Bacterial Toxins	\$45,026
LANL-20061388PRD1	Numerical Techniques of Rifting and Passive Margin Formation: The Role of Mantle Plumes	\$57,706
LANL-20061395PRD1	Synthesis of Molecular Actinide Nitrides	\$157,932
LANL-20061396PRD1	Studies of Sub-Micron Ferromagnetic Particles using Magnetic Resonance Force Microscopy	\$48,273
LANL-20061397PRD1	Measurements of Absorption and Scattering by Aerosols: How do they Offset Global Warming?	\$37,656
LANL-20061402ER	The Secret Life of Quasiparticles	\$119,899
LANL-20061423ER	Improved Length Scaling in Accelerated Molecular Dynamics Methods	\$316,173
LANL-20061435ER	Experimental Study of Driven Magnetic Relaxation in a Laboratory Plasma	\$343,111
LANL-20061438PRD2	Interface-Governed Behavior of Nano-Layered Metallic Composites	\$62,187
LANL-20061442PRD2	Ion Synthesis of Novel SiGe Structures	\$146,634
LANL-20061449PRD2	Non-Equilibrium Stochastic Processes in Classical and Quantum Systems	\$115,191
LANL-20061456PRD2	Searching for New Uranium Based Superconductors	\$128,922
LANL-20061468PRD2	Fluorescence Lifetime Spectroscopy by Flow Cytometry	\$102,457
LANL-20061471DR	Advancing the Chemistry Material Science and Theoretical Understanding of Actinides	\$1,044,965
LANL-20061475PRD2	Three-dimensional Magnetic Reconnection Experiments	\$89,492
LANL-20061493DR	High-Resolution Physically-Based Model of Semi-Arid River Basin Hydrology	\$605,237
LANL-20061494ER	A Strategy for Effective Antibiotic Delivery	\$160,109
LANL-20061517ER	Trapping Rare Culture Mutations for Bioweapon Attribution and Forensics	\$33,828
LANL-20061524PRD3	Accelerated Molecular Dynamics at Complex Interfaces	\$136,215
LANL-20061526PRD3	Multiscale Modeling of Irradiation-induced Defect Processes in High-Cr Ferritic Steels	\$115,706
LANL-20061528PRD3	High Efficiency Carbon Nanotube-TiO2 Nanostructured Solar Cells	\$2,650
LANL-20061558PRD3	Theoretical Studies of Cold Atom Fermi-liquids and Bose-Einstein Condensates on Chips	\$35,655
LANL-20061562PRD3	Fundamental Oxygen Reduction Reaction Studies at high pH	\$112,495
LANL-20061563PRD3	Search for Temporal Variation of the Fine Structure Constant	\$41,179

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20061585ER	Visualization Applied to Electronic Properties of Novel Superconductors	\$274,361
LANL-20061600PRD4	Ultrafast Phenomena: Short-Pulse laser Interactions with Atoms and Molecules	\$137,084
LANL-20061615PRD4	A Chemical Route to Integrate Carbon Nanotubes into Microelectromechanical Systems	\$140,257
LANL-20061624PRD4	Self-Organizing Wireless Ad-Hoc and Sensor Networks with Functional Guarantees	\$272,887
LANL-20061630PRD4	Flexible Plastic Electrodes for Cheap Solar Cells	\$124,018
LANL-20061639PRD4	Theoretical Investigations of Plastic Deformation in Energetic Materials	\$117,771
LANL-20070003DR	Beyond the Neutrino Matrix	\$2,588,950
LANL-20070005DR	Dark Energy and the Cosmic Web	\$1,587,624
LANL-20070008DR	Novel Inclusion Compounds for Hydrogen Storage	\$1,605,410
LANL-20070010DR	Rapid Iterative Detection Using Smart Pathogen Signatures	\$1,437,230
LANL-20070013DR	Correlations and Control of Properties of Metallic U and Pu	\$2,180,393
LANL-20070023DR	High-Current, High-Energy, Laser-Driven Ion Accelerators: An Enabling and Revolutionary Scientific Research Tool	\$1,600,491
LANL-20070028DR	Cold Atom Surface Imaging	\$1,586,259
LANL-20070029DR	A Systematic Strategy for Gene Function Discovery	\$1,497,737
LANL-20070060DR	Metamaterials for Threat Reduction Applications: Imaging, Signal Processing, and Cloaking	\$1,596,345
LANL-20070063DR	The Physics of Algorithms	\$1,552,510
LANL-20070064DR	Coexistence of Magnetic and Superconducting Electrons in Strongly Correlated Matter	\$1,607,426
LANL-20070074DR	Physics of Helium Retention in Palladium/Tritium Systems	\$1,363,090
LANL-20070077DR	Quantum Control in Condensed Media for Studies of Direct Optical Initiation of Explosives	\$1,374,373
LANL-20070096DR	Biomimetic Hydrogen Production by Photoinitiated Transition Metal Catalysis	\$1,601,531
LANL-20070099DR	Host-Pathogen Interactions (Pathomics) in Avian Influenza	\$1,528,346
LANL-20070131ER	Drug Binding and Catalytic Mechanism in DHFR	\$330,836
LANL-20070134ER	Cerium-Doped Glass Scintillators	\$346,337
LANL-20070148ER	Substrates for the Detection and Differentiation of Influenza Viridae	\$332,904
LANL-20070156ER	Coulomb Mechanisms for Ion Damage in Insulators in the Electronic Stopping Regime	\$294,812

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20070160ER	Beta Decay of Polarized Radioactive Atoms in an Optical Tweezer	\$419,710
LANL-20070163ER	Nano-Engineered Casimir Forces	\$357,178
LANL-20070170ER	Magnetic Turbulence and Kinetic Dissipation in Solar Wind and Solar Corona Plasmas	\$290,635
LANL-20070171ER	Understanding Dynamical Diversity of Extrasolar Planets	\$264,408
LANL-20070172ER	New Approach to Bayesian Inference Under Modeling Uncertainty	\$371,219
LANL-20070173ER	Nano-Structured Foams for Hydrogen Storage	\$375,488
LANL-20070176ER	Nano-Composite Scintillator for Neutron Capture Measurements	\$308,068
LANL-20070180ER	Understanding a Killer: A Predictive Model of Tumor Development	\$345,442
LANL-20070187ER	Sharp characterization of minimizers (typically) involving interfaces in images	\$360,153
LANL-20070188ER	Probing Correlated Electron Behavior via Direct Uranium-235 Nuclear Magnetic Resonance	\$277,821
LANL-20070195ER	Instabilities Driven Turbulence and Mixing in Convergent Geometries	\$331,182
LANL-20070202ER	Moment-Based Interface Tracking for Multi-Material Flows	\$321,806
LANL-20070204ER	Synthesis of Nanowire Heterostructures for Strain-Controlled Bandgap Engineering	\$342,137
LANL-20070234ER	Cold Atom Quantum Liquid Mixtures	\$311,261
LANL-20070235ER	Investigation of Energetic Ion Generation and Transport in Ultra-Intense Laser-Matter Interaction	\$355,533
LANL-20070243ER	Hyperbolic Polynomials Approach to Approximate Counting and Lower/Upper Bounds in Combinatorics, Statistical Physics and Computational Geometry	\$346,072
LANL-20070256ER	Excited States and Optical Response of Nanosized Molecules at Linear Scaling Numerical Cost	\$343,446
LANL-20070267ER	An Experimental and Theoretical Framework for Reactive Micromixing	\$267,388
LANL-20070270ER	Synthetic Decoys for Biothreat Agents	\$299,709
LANL-20070276ER	New States of Matter in Stars, Nuclei and Cold Atoms	\$313,486
LANL-20070330ER	Magnetic Resonance Force Microscopy Studies of Ferromagnets on a Nanometer Scale.	\$269,202
LANL-20070338ER	From Novel Principles to Novel Device Structures for High-Efficiency Generation of Solar Electricity	\$262,302
LANL-20070349ER	Ultra-Low Field Resonant Absorption Magnetic Resonance Imaging of Neural Activity	\$337,197
LANL-20070367ER	X, Gamma, Alpha : Ultra-High Resolution Spectroscopy	\$347,892

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20070368ER	A Novel Approach to Manufacturing Ultra-Tall Carbon Nanotube Forests	\$327,216
LANL-20070380ER	Controlling Oxidation-States in Actinide-Oxides through Crystal Lattice Pinning	\$345,555
LANL-20070382ER	Unique Observations of Nature's Largest Explosions	\$337,401
LANL-20070416ER	Agent-Based Modeling and Simulation of Cellular Signaling Systems	\$317,724
LANL-20070421ER	Fast Approximation Algorithms for Systems of Linear Inequalities	\$374,093
LANL-20070436ER	Optical, Electronic, and Magnetic Doping of ENABLE Grown Semiconducting Films	\$336,050
LANL-20070441ER	Subsurface Transport Parameter Estimation with Multiscale, Multiobjective Optimization	\$257,290
LANL-20070445ER	Tunable Infra-Red Chromophores through N-Type Doping of Wide-Gap Semiconductor Nanocrystals	\$326,241
LANL-20070451ER	Non-Precious Metal Nanocomposites for Fuel Cell Catalysis	\$334,560
LANL-20070483ER	Minimal Description of Complex Shapes with Applications to Experiments and Validation of Large-Scale Codes	\$421,736
LANL-20070488ER	Electron-Neutrino Correlation in Neutron Beta Decay	\$287,048
LANL-20070505DR	Multiscale Modeling of Strongly Interacting Systems	\$805,666
LANL-20070506ER	Experimental and computational studies of magnetic bubble expansion as a model for extra-galactic radio lobes	\$216,641
LANL-20070518DR	Development of a Magnetically Driven Target for Thermo-Nuclear Burn Studies (*U)	\$1,466,272
LANL-20070525PRD1	Molecular Actinide Alkylidene Complexes	\$156,212
LANL-20070541PRD1	Superconductivity in Non-Centrosymmetric Materials	\$133,058
LANL-20070560PRD1	Creating a Mathematical Foundation for High-Dimensional Search and Optimization Algorithms to Solve Complex Nonlinear Models	\$161,611
LANL-20070565PRD1	Structure and Function of Human Mineralised Tissue	\$17,535
LANL-20070573PRD1	Quantum Fluctuations in Bose-Einstein Condensates	\$61,717
LANL-20070574PRD1	Gamma-Ray Bursts and Gravitational Waves from Compact Mergers	\$144,825
LANL-20070576PRD1	Vibrational Features and Quantum Transport in Molecular Electronics	\$106,714
LANL-20070585PRD2	Multifunctional Copper-Carbon Nanotube Nanocomposites	\$151,819
LANL-20070626PRD2	Theoretical and Experimental Investigation of Relaxation Mechanisms in Ultra-low Field NMR for Magnetic Resonance Imaging	\$128,530

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20070640PRD2	Multiscale Simulations for Cascade Overlap in Irradiated Materials	\$102,567
LANL-20070645PRD2	The Role of NS1 in Disrupting Immune Responses During Influenza Infection: a Modeling and Experimental Approach	\$81,874
LANL-20070649PRD2	Noise in Biochemical Networks: Rigorous Analysis with Field-Theoretic Tools	\$127,793
LANL-20070653PRD2	Entanglement and Correlations in Complex Physical Systems	\$114,852
LANL-20070654PRD2	Ultrafast Non-equilibrium Physics of the Fractional Quantum Hall System	\$131,167
LANL-20070658PRD2	Detecting the Highest Energy Gamma-Rays and Neutrinos to Determine the Origin of Cosmic Rays	\$156,440
LANL-20070688PRD3	Photodegradation of Leaf Litter in Water-Limited Ecosystems	\$123,942
LANL-20070690PRD3	Time-Dependent Density Functional Theory for Ultrafast Optical Phenomena in Strongly Correlated Electron Materials	\$125,911
LANL-20070701PRD3	Anti-Neutrino Oscillation and Cross Section Measurements at MiniBooNE	\$137,466
LANL-20070705PRD3	Phase Transitions in Quantum Systems and Quantum Information	\$116,618
LANL-20070709PRD3	Lanthanide Main-Group Element Multiple Bonds	\$32,170
LANL-20070722PRD3	Sensitization of Lanthanide Ion Fluorescence Using Nanocrystal Quantum Dots	\$137,818
LANL-20070723PRD3	Chemically Synthesized Germanium Nanocrystals for Applications in Solar-Energy Conversion	\$118,631
LANL-20070751PRD4	Detecting Dark Matter with Cryogenic Liquids	\$30,024
LANL-20070760PRD4	Pore-Scale Modeling of Multiphase Flow and Reaction in Charged Porous Media	\$102,843
LANL-20070765PRD4	Modeling Fast Basal Sliding of Ice Sheets for Climate and Sea Level Prediction	\$94,209
LANL-20070766PRD4	Molecular Level Investigation of Tunable Energetic Mixtures	\$115,222
LANL-20070768PRD4	Synthesis, Chemistry and Theoretical Studies of 5f-Element Hydride Complexes	\$142,201
LANL-20070775PRD4	The Dynamics of Dark Energy	\$53,184
LANL-20070781PRD4	Modeling the Immune Response to Pathogens	\$118,324
LANL-20080001DR	One-Step Biomass Conversion: Looking to Nature for Solutions to Energy Security	\$1,392,684
LANL-20080009DR	Prompt and Radiochemical NTS Diagnostics and New Measurements (U)	\$1,412,241
LANL-20080015DR	Hot Spot Physics and Chemistry in Energetic Materials Initiation	\$1,466,051
LANL-20080031ER	Precision Cosmology and the Neutrino Sector	\$328,567
LANL-20080037DR	Design, Synthesis, and Theory of Molecular Scintillators	\$1,662,205

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20080039DR	Global Monitoring of the Sky with Thinking Telescopes: Finding and Interrogating Cosmic Explosions	\$1,511,691
LANL-20080040DR	Automated Change Detection in Remote Sensing Imagery	\$1,393,620
LANL-20080057DR	Carrier Multiplication in Nanoscale Semiconductors for High-Efficiency, Generation-III Photovoltaics	\$1,151,985
LANL-20080080ER	Finding the First Cosmic Explosions	\$284,583
LANL-20080085DR	Construction and Use of Superluminal Emission Technology Demonstrators with Applications in Radar, Astrophysics, and Secure Communications	\$1,330,194
LANL-20080097DR	Ultrafast Nanoscale XUV Photoelectron Spectroscopy	\$1,676,173
LANL-20080114DR	Advanced Fuel Forms with Microstructures Tailored to Naturally Induce Fission Product Separation During Service	\$1,518,384
LANL-20080116DR	Probing Physics Beyond the Standard Model through Neutron Beta Decay	\$1,575,031
LANL-20080126DR	Flash before the Storm: Predicting Hurricane Intensification using LANL Lightning Data	\$1,342,184
LANL-20080128ER	Nonconvex Compressed Sensing	\$284,063
LANL-20080130DR	Cosmic Explosions Probing the Extreme: X-Ray Bursts, Superbursts, and Giant Flares on Neutron Stars	\$2,221,506
LANL-20080138DR	Genomes to Behavior: Predicting Bacterial Response by Constrained Network Interpolation	\$1,572,892
LANL-20080164ER	Materials and Device Optimization towards Room Temperature Spin-Transport through Single-Walled Carbon Nanotubes	\$538,961
LANL-20080182ER	Foundations for Practical Pattern Recognition Systems	\$326,022
LANL-20080201ER	The First Precise Determination of Quark Energy Loss in Nuclei	\$273,361
LANL-20080210ER	Terahertz Generation Harnessing the Two-Stream Instability	\$307,227
LANL-20080221ER	Nano-Fission-Material based Neutron Detectors	\$346,552
LANL-20080228ER	Efficient Structures for Low-Energy Acceleration of Light Ions	\$256,249
LANL-20080230ER	Identifying High Risk Species Critical for the Emergence of Pandemic Influenza	\$407,562
LANL-20080268ER	The Effect of Acoustical Waves on Stick—Slip Behavior in Sheared Granular Media: Implications for Earthquake Recurrence and Triggering	\$267,920
LANL-20080300ER	Multilevel Adaptive Sampling for Multiscale Inverse Problems	\$269,090
LANL-20080317ER	Detection of Respiratory Infection by Scent	\$267,431
LANL-20080321ER	Developing a Remote Sensing of the Solar Surface	\$301,999

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20080323ER	Spins in Organic Semiconductors	\$327,649
LANL-20080341ER	Adaptive Algorithms for Inverse Problems in Imaging	\$322,199
LANL-20080342ER	Entanglement in Quantum Ground States	\$317,156
LANL-20080380ER	Designing Communication Methods for Bottom-Up Self-Assembled Nanowire Networks of Emerging Computer Architectures	\$260,442
LANL-20080391ER	Stochastic Transport on Networks: Efficient Modeling And Applications to Epidemiology	\$248,328
LANL-20080394ER	Strain-induced novel physical phenomena in epitaxial ferroic nanocomposites	\$332,319
LANL-20080395ER	Genetically Engineered Polymer Libraries	\$320,090
LANL-20080409ER	Compact Millimeter Wave Spectrometer Based on a Channel Drop Filter	\$345,262
LANL-20080414ER	Novel High Performance Terahertz Metamaterial Photonic Devices	\$309,808
LANL-20080424ER	CP-violating Moments of Atoms and Nuclei	\$327,479
LANL-20080448ER	Critical and Crossover Behaviors at Jamming Transitions	\$298,047
LANL-20080464ER	A New Approach to Unravel Complex Microbial Community Processes	\$409,188
LANL-20080473ER	Ultrafast Nanoplasmonics for Photonics and Quantum Control at the Nanoscale	\$326,583
LANL-20080519ER	Probing Unconventional Superconductivity in Heavy Fermion Thin Films	\$300,853
LANL-20080523ER	Photocatalytic Materials Based on Quantum Confined Semiconductor Nanocrystals.	\$502,979
LANL-20080562ER	Time-reversible Born-Oppenheimer Molecular Dynamics	\$301,614
LANL-20080603ER	Nonequilibrium Mechanics of Geomaterials	\$337,326
LANL-20080618ER	Evolution and Function of Microbial Signatures	\$329,889
LANL-20080636ER	Probing physics beyond the Standard Model with supernovae	\$274,478
LANL-20080660ER	Novel Materials for Gamma-Ray Detection based on Nano-Engineered Semiconductor Nanocrystals*	\$93,361
LANL-20080661DR	Novel Signatures of Beyond the Standard Model at the Large Hadron Collider*	\$684,023
LANL-20080662DR	Information Science and Technology: Metagenomics*	\$618,698
LANL-20080663DR	High-Precision Spectroscopic Search for Variation of the Fine-Structure Constant*	\$1,482,276
LANL-20080671DR	Statistical Physics of Networks, Information and Complex Systems*	\$567,971
LANL-20080673DR	Complex Biological and Bio-Inspired Systems*	\$487,968
LANL-20080689PRD1	Dynamics of Quantum First Order Phase Transitions	\$49,307

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20080695PRD1	First-Principles-Based Equations of State Including Multi-Phase Chemical Equilibrium	\$79,272
LANL-20080700PRD1	Study of Hybrid Semiconductor/Molecular Systems for Photo-production of Hydrogen	\$52,121
LANL-20080703PRD1	Spectroscopic Studies and Photonic Applications of "Giant" Nanocrystal Quantum Dots	\$95,106
LANL-20080705PRD1	Structure-Property Relationship for Strained One Dimensional Ferroelectric Nanostructures	\$62,516
LANL-20080710ER	Steps Toward Practical Quantum Information Processing*	\$168,947
LANL-20080716ER	Coupling of Genetics and Metabolism and the Orgin of Life*	\$391,818
LANL-20080717ER	New High-Nitrogen Polydentate Ligands for Actinide Separations	\$453,054
LANL-20080718ER	Accuracy of Laser-Induced Breakdown Spectroscopy for Trace Detection	\$258,262
LANL-20080720ER	Trapped-ion Quantum Simulations of Condensed-Matter Systems for Understanding of Novel Materials*	\$410,257
LANL-20080723PRD2	Nonequilibrium Quantum Phase Transitions	\$83,490
LANL-20080724PRD2	Towards Human Level Artificial Intelligence: A Cortically Inspired Semantic Network Approach to Information Processing and Storage	\$25,580
LANL-20080726PRD2	Modeling control of viruses by immune responses	\$9,493
LANL-20080727PRD2	Multi-scale Analysis of Multi-physical Transport Processes of Electroosmosis in Porous Media	\$74,487
LANL-20080728PRD2	Dissipation and Decoherence in Complex Many-Body Systems	\$42,601
LANL-20080729DR	Information Science and Technology: Streaming Data	\$598,219
LANL-20080730PRD2	Finite State Projection for Accurate Solution of the Master Equation	\$27,602
LANL-20080731PRD2	Strongly Coupled Fermion Systems: From Atomic Gases to Dark Matter	\$27,450
LANL-20080733ER	New Frontiers in Viral Phylogenetics	\$78,143
LANL-20080735ER	Three-Dimensional Dynamics of Magnetic Reconnection in Space and Laboratory Plasmas*	\$239,132
LANL-20080743ER	The Roadrunner Universe	\$424,657
LANL-20080744ER	Implicit Monte Carlo Calculations of Supernova Light-Curves	\$90,077
LANL-20080747ER	Instabilities Driven Reacting Compressible Turbulence	\$333,318
LANL-20080755ER	Cellulosomes in Action: Peta-Scale Atomistic Bioenergy Simulations	\$260,589

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LANL - Los Alamos National Lab

Project ID	Project Name	FY Total
LANL-20080759ER	Parallel-Replica Dynamics Study of Tip-Surface and Tip-Tip Interactions in Atomic Force Microscopy and the Formation and Mechanical Properties of Metallic Nanowires	\$200,271
LANL-20080761ER	Saturation of Backward Stimulated Scattering of Laser In The Collisional Regime	\$219,097
LANL-20080766ER	Experimentally Constraining Climate Forcing by Black Carbon Deposition on Snow*	\$62,634
LANL-20080769ER	Integrated Feature Vector for Human Pathogen Characterization*	\$132,344
LANL-20080771ER	Modeling Influenza Infection and the Early Immune Response*	\$121,711
LANL-20080774ER	Ultra Deep Sequencing of HIV Acute Infection Sample to Determine Nature of Transmitted Virus and Understand Immune Escape*	\$112,079
LANL-20080779ER	Climate Change Forecasts Using Ensemble Forecasting Games*	\$129,259
LANL-20080780PRD2	Synthesis and Characterization of Novel Metal-Organic Frameworks for Hydrogen Storage	\$29,568
LANL-20080783ER	Integrated Multiscale Simulation for Advanced Nuclear Fuel*	\$106,609
LANL-20080785PRD3	Semiconductor Nanowire Heterostructures	\$6,371
LANL-20080787PRD3	Statistical Physics of Optimization	\$10,842
LANL-20080788PRD3	Fluvial Geomorphic Response to Permafrost Thawing: Implications for the Global Carbon Budget and Arctic Hydrology	\$23,873
LANL-20080789PRD3	Determining the Mechanisms of Enzymes Xylose Isomerase and HIV Protease using Neutron Crystallography	\$20,575
LANL-20089999ER	Post-Project Debits and Credits	\$180,307
Total # of Projects for LANL:	281	Total Cost for LANL: \$124,722,088

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LBNL - L. Berkeley National Lab

Project ID	Project Name	FY Total
LB06009	Compositional and Functional Analysis of Cell Walls During Metal-bacterial Interactions	\$173,000
LB06015	Integrated Microbial Community Genomes Data Management System	\$329,954
LB06017	New Technology for Permeability Enhancement for Natural Gas Extraction in Tight Reservoirs	\$147,806
LB06018	Coupled Modeling of Hydrology, Nutrient Cycling, and Vegetation: Applications to Water Quality and Water Balance	\$127,545
LB06025	Development of a Low-Energy, High-Current Astrophysical Accelerator	\$216,237
LB06026	Extended First Order System Least Squares Finite Elements	\$64,059
LB06031	Fabrication of Photovoltaic Devices Using Nanostructured Biomaterials	\$129,603
LB06033	Computational and Experimental Testing of Methods for Binning Sequences from Metagenomic Data	\$262,522
LB06035	Expression Profiling of Radiation and Cancer Susceptibility Genes	\$428,485
LB06038	Integration of Synthetic Nano-materials for High Speed, Robust, and Flexible Circuitry	\$93,931
LB07003	Synthetic and Electrochemical Approaches to Metal-Metal Bonds in Actinides	\$158,798
LB07004	Soft Collinear Effective Theories Applied to Collider Physics	\$302,429
LB07005	Structured, Adaptive Mesh Refinement Method for Multiphase Reactive Transport in Groundwater	\$294,902
LB07006	Conversion of Glycerol and Aromatic Compounds from Biomass to Major 3- and 6- Carbon Industrial Organic Compounds	\$122,967
LB07007	On-demand Overlays for Scientific Applications	\$146,988
LB07008	Applications of Adjoint Field Methods and Time-Reversal Data Processing to Inverse Problems in Electromagnetic, Seismics, and Ultrasonics	\$152,027
LB07009	Chemical Reactions at Liquid/Vapor Interfaces Probed by Photoemission Spectroscopy	\$174,931
LB07010	Functional Interactomics: Integrating Physical and Functional Interaction Networks	\$284,814
LB07012	New Experimental Initiative to Deduce (n,f) Cross Sections for Advanced Fuel Studies	\$191,764
LB07014	Understanding the Chemistry of Innovative Air Cleaning Technologies	\$135,894
LB07015	FEL Concepts for Multiple Independent X-ray Beamlines	\$324,754
LB07016	Building In-Situ Electronic Structure Study Capability with Photon-in/ Photon-out Soft X-ray Spectroscopy	\$218,964

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LBNL - L. Berkeley National Lab

Project ID	Project Name	FY Total
LB07017	Ultra-compact Field Desorption Neutron Source for Cancer Research	\$251,704
LB07019	Soot in Ice: Does Soot Enhance the Melting of Ice?	\$221,935
LB07020	Physics Detector and Sensor Technologies Applied to Geological and Geophysical Applications at DUSEL	\$294,725
LB07021	Integrated Decision Support Tool for Joint Optimal Control of Energy and Water Systems	\$281,881
LB07024	Cooperation of Biochemical and Mechanical Signals in Regulating Cell Fate Decision During Tissue Morphogenesis	\$261,065
LB07025	Baryon Oscillations and Dark Energy: Prototyping Instruments	\$288,935
LB07027	Hyperons in Polarized Proton Collisions and the Origin of the Nucleon Spin	\$153,866
LB07029	Integrated Performance Monitoring of Grid and HPC Workloads	\$137,105
LB07030	Two-Element Ultracold-Atom Quantum Simulator of Materials	\$122,584
LB07031	High Brightness Cathodes as Electron Sources for FELs	\$360,999
LB07033	Ultra-high Resolution Optics for Soft X-ray Inelastic Scattering	\$170,922
LB07034	Emittance Manipulation and Beam Conditioning for FELs	\$446,470
LB07036	Chinas Energy Future: Changes in Energy Intensity	\$329,022
LB07040	Quantifying the Quantum Backaction of a Non-Linear Dispersive Measurement	\$99,727
LB08001	Optimization of Flux Pinning Type II Superconductor Based Magnets for Soft X-ray Scattering Applications	\$217,689
LB08002	Holistic Approach to Energy Efficient Computing Architecture	\$743,583
LB08003	Low Order Models and Numerical Methods for Computational Chemistry	\$153,868
LB08004	Integrated Earth Systems Climate Modeling and Analysis	\$283,289
LB08005	Understanding the Nanothermodynamics of Molecular Machines	\$186,246
LB08006	Heavy-atom Ultra-fast Scintillator for Time-Of-Flight Positron Emission Tomography	\$265,929
LB08007	Development of Nanowire Carpet Hybrid Pixel (NCHyP) Detectors	\$161,456
LB08008	Probing Transient Molecular Entanglement Using Femtosecond High Resolution Delayed-field Coincidence Imaging	\$138,225
LB08009	Soft X-ray Scattering as a New Probe of Polymer Systems	\$325,827
LB08010	Do CRISPR Regions of Bacteria and Archaea Constitute an RNAi Based Immune System?	\$246,111
LB08011	Development of a 100 km ³ Neutrino Detector for Extremely High Energy Neutrinos	\$235,050

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LBNL - L. Berkeley National Lab

Project ID	Project Name	FY Total
LB08012	Genome Organizer in Carcinogenesis	\$468,602
LB08013	Light-Boosted Fermentation in the Yeast <i>Saccharomyces Cervisiae</i>	\$139,164
LB08015	Energy-Smart Disk-Based Mass Storage System	\$243,580
LB08016	Carbon-Based Nanostructures as a Prototype for New Electronics	\$281,951
LB08017	Quantum Information Science with Integrated Color Centers in Diamond	\$166,662
LB08018	Coupled Process Models and Monitoring for Advanced Nuclear Fuel Cycles	\$499,979
LB08019	Development of a Laser Goniometer for X-ray and Electron Diffraction Microscopy	\$103,540
LB08020	Decoding Dark Energy with Weak Gravitational Lensing	\$218,555
LB08021	Metal Nitrosyl Complexes and Catalytic C-H Bond Functionalization	\$146,202
LB08022	Experimental Demonstration of a Laser-Plasma-Accelerator Driven Free-Electron Laser	\$511,971
LB08023	Lorentz Compaction of Scales for Ultra-efficient Simulation of Advanced Accelerators (and other systems)	\$201,934
LB08024	Transition-Metal-Doped GeTe Nanowires as a Single-Phase Multiferroic System	\$132,973
LB08025	Lattice-Boltzmann Investigations of Isotopic Fractionation During Mineral Precipitation	\$128,000
LB08026	Novel Techniques to Characterize Secondary Organic Aerosols Formed From Gas-phase Volatile Organic Compounds Emitted From Biogenic Sources	\$132,142
LB08027	Interaction of Fragile X Mental Retardation Protein with Thymine-DNA Glycosylase: Implication in the Molecular Mechanism of Fragile X Syndrome	\$69,942
LB08028	Advance Silicon Detectors for Future Short Pulse X-ray Sources	\$214,889
LB08029	Transport in Thin Polymer Films	\$348,193
LB08030	Conducting Metal-Organic Frameworks	\$131,890
LB08031	Global Methane Cycle and Climate Change	\$174,003
LB08032	Design and Properties of Materials Involving Elements with High Neutron Cross-Sections That Are Useful in Neutron Detection and Related Neutron Technologies	\$288,532
LB08033	Maximizing Photosynthetic Yield by Increasing Sink Strength	\$216,562
LB08034	Microbiomics of Complex Microbial Communities in Environmental Samples	\$232,358
LB08035	Enhancing the Effectiveness of Manycore Chip Technologies for High-End Computing	\$214,011

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LBNL - L. Berkeley National Lab

Project ID	Project Name	FY Total
LB08036	Reference Benchmarks for the Dwarfs (Algorithms)	\$218,981
LB08037	Development of a Building Operating Platform	\$122,254
LB08038	Using New Microbial Assays to Characterize Dampness-related Exposures	\$142,048
LB08039	Using IP Telephony and Wireless Technologies to Extend the Reach of Conventional Building Automation Systems	\$145,871
LB08040	Software for Integrated Analysis of Sensor Data for Advanced Energy Controls	\$137,882
LB08041	Building Informatics Environment Enabling Rapid Prototyping and Model Extraction for Building Automation Systems	\$144,791
LB08042	Hierarchical Assemblies of Peptide-Polymer Conjugates	\$161,413
LB08043	High-Yield CCD Process Development at the LBNL MicroSystems Lab	\$298,059
LB08044	Understanding the Electronic Energy Level Alignment at Nanoscale Interfaces	\$54,565
LB08045	Three Dimensional Printing of Ceramics with Submicron Resolution	\$206,944
LB08046	Calibrating Baryon Acoustic Oscillations for Future Dark Energy Experiments	\$121,036
LB08047	Multi-scale Imaging of Termite Hind Gut Microbial Biofilms	\$199,231
LB08048	Development of Multi-Modular Assemblies with Reduced Material and Services for Specifications of Future Particle Tracking	\$131,456
LB08049	Fracture of Cortical Bone: Mechanisms Underlying the Origins of Toughness in Hard Mineralized Tissues	\$76,961
Total # of Projects for LBNL:	84	Total Cost for LBNL: \$18,287,714

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LLNL - L. Livermore National Lab

Project ID	Project Name	FY Total
05-ERD-018	LOCAL: Locality-Optimizing Caching Algorithms and Layouts	\$234,125
05-ERD-036	Advanced Studies of Hydrogen at High Pressures and Temperatures	\$138,570
05-ERD-064	Characterizing Hypothetical Proteins	\$67,072
05-ERD-073	Leading the Quantum Limit Revolution	\$298,162
05-ERD-078	Discovering the Folding Rules that Proteins Obey	\$181,943
05-ERD-079	A New Method for Wave Propagation in Elastic Media	\$247,582
05-SI-003	Biological Imaging with Fourth-Generation Light Sources	\$1,599,756
06-ERD-005	Critical Materials Issues for Generation IV Reactors	\$225,351
06-ERD-009	Scalable Data Management for Massive Semantic Graphs	\$677,302
06-ERD-010	The Physics of Recombining Plasmas in Celestial Sources	\$454,793
06-ERD-012	Conversion of Plutonium and Enriched Uranium	\$332,819
06-ERD-013	Biophysical Characterization of Pathogen Invasion	\$208,244
06-ERD-014	Separation of Carbon Dioxide from Flue Gas using Ion Pumping	\$95,368
06-ERD-017	Laser-Driven Dynamic Hohlräume	\$301,496
06-ERD-024	Measurements to Facilitate Advanced Tokamak Science in Burning Plasma Experiments	\$453,487
06-ERD-026	Urban Atmospheric Turbulence: Improved Turbulence Closure Models through Observations and Simulations	\$265,910
06-ERD-027	Investigating New Regimes of Material Strength at Ultrahigh Strain Rates and Pressures	\$511,445
06-ERD-031	Atmospheric ¹⁴ CO ₂ Constraints on and Modeling of Net Carbon Fluxes	\$281,670
06-ERD-035	Fundamental Investigation of Laser-Induced Surface Damage in Optical Materials	\$986,890
06-ERD-036	A Predictive Model of Fragmentation using Adaptive Mesh Refinement and Hierarchical Material Model	\$836,033
06-ERD-037	Long-Time-Scale Shock Dynamics of Reactive Materials	\$126,802
06-ERD-039	The Properties of Confined Water and Fluid Flow at the Nanoscale	\$286,193
06-ERD-040	Thermal-Fluidic System for Manipulating Biomolecules and Viruses	\$370,313
06-ERD-051	Development of Single-Cell Raman Spectroscopy for Cancer Screening and Therapy Monitoring	\$200,423
06-ERD-054	Large Aperture Optics Performance	\$2,115,696

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LLNL - L. Livermore National Lab

Project ID	Project Name	FY Total
06-ERD-055	Mitigation of Electromagnetic Pulse Effects from Short-Pulse Lasers and Fusion Neutrons	\$913,084
06-ERD-057	Francisella Tularensis: Understanding the Host-Pathogen Interaction	\$508,229
06-ERD-059	A Novel Structure-Driven Approach to Sequence Pattern Definition for Remote Homology Detection	\$475,621
06-ERD-061	Characterization and Quantification of Dynamic Robustness in Biological Systems	\$530,843
06-ERD-065	A Compact, High-Intensity Neutron Source Driven by Pyroelectric Crystals	\$501,601
06-ERD-066	Regional Climate	\$496,644
06-ERD-067	Transport Behavior and Conversion Efficiency in Pillar-Structured Neutron Detectors	\$589,011
06-ERI-001	Development of Integrated Microanalysis of Nanomaterials	\$444,652
06-ERI-002	The Chemistry of Core Formation	\$272,306
06-ERI-005	Evidence for Stratospheric Downwelling Associated with High-Elevation Topography	\$142,713
06-LW-063	Observation of Coherent Terahertz-Frequency Emission from Shocked Polarizable Materials	\$198,415
06-SI-001	Novel High-Energy-Density Source	\$1,474,491
06-SI-002	Active Detection and Imaging of Nuclear Materials with High-Brightness Gamma-Rays	\$2,928,135
06-SI-003	Developing and Integrating Novel Technologies for the Production and Characterization of Membrane Proteins	\$2,161,296
06-SI-004	The Ultrafast Lattice Response of the Shocked Solid	\$1,788,479
06-SI-005	Transformational Materials Initiative	\$7,127,921
06-SI-006	Predictive Knowledge Systems for Large Complex Data Sources	\$4,979,820
07-ERD-004	Multipulse, High-Energy Backlighting for a Compton-Radiography Ignition Diagnostic for High-Power Lasers	\$151,288
07-ERD-005	Cladding-Pumped Raman Fiber Lasers	\$177,317
07-ERD-007	Kinetics of Phase Evolution: Coupling Microstructure with Deformation	\$1,083,608
07-ERD-011	Broad-Area Search for Proliferant Infrastructure	\$196,539
07-ERD-013	Developing a First Principles Computational Toolkit for Predicting the Structural, Electronic, and Transport Properties of Semiconductor Radiation-Detection Materials	\$227,518
07-ERD-014	Maximizing the Science from Astrophysical, Time-Domain Surveys: Targeted Follow-Up	\$240,156

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LLNL - L. Livermore National Lab

Project ID	Project Name	FY Total
07-ERD-015	Discovery of a Light Higgs Boson with b Quarks	\$363,054
07-ERD-016	A New Approach to Simulating Inhomogeneous Plasmas for Inertial Fusion Energy and Other Applications	\$202,093
07-ERD-017	Serrated Light Illumination for Deflection-Encoded Recording (SLIDER)	\$385,640
07-ERD-018	A Novel Method for Extracting Signals from Noisy Broadband Data using Poynting Vector Measurements	\$25,275
07-ERD-019	Detection, Classification, and Estimation of Radioactive Contraband from Uncertain, Low-Count Measurements	\$497,705
07-ERD-020	Dense Gas Transport in Complex Environments	\$298,646
07-ERD-023	Techniques for Supernova Cosmology with the Large Synoptic Survey Telescope	\$612,068
07-ERD-024	Deformation of Low-Symmetry and Multiphase Materials	\$383,466
07-ERD-025	Development of Novel Antimicrobial Proteins and Peptides Based on Bacteriophage Endolysins	\$318,593
07-ERD-027	Knowledge-Based Coreference Resolution	\$564,740
07-ERD-028	Advanced Computational Techniques for Uncertainty Quantification	\$315,280
07-ERD-029	Electronic Anomalies in Ordered and Disordered Cerium at High Pressures and Temperatures	\$491,475
07-ERD-034	Plasticity at High Pressures and Strain Rates using Oblique-Impact Isentropic-Compression Experiments	\$653,490
07-ERD-035	VidCharts: Real-Time Algorithms for Large-Scale Video Analysis, Compression, and Visualization	\$633,873
07-ERD-041	Ultraviolet-Visible Resonance Raman Studies of High Explosives, Impurities, and Degradation Products for Enhanced Standoff Detection	\$235,136
07-ERD-042	Standing-Wave Probes for Micrometer Scale Metrology	\$352,430
07-ERD-044	Molecular Dynamics Simulations of Hot, Radiative Plasmas	\$848,002
07-ERD-045	Salicylic Acid Derivatives: A New Class of Scintillators for High-Energy Neutron Detection	\$281,624
07-ERD-046	Development of Novel Transgenic Technologies to Study Genome Regulation and Architecture	\$449,563
07-ERD-047	Investigation of the Double-C Curve Behavior in the Plutonium-Gallium Time-Temperature-Transformation Diagram	\$481,754
07-ERD-048	Quantum Properties of Plutonium and Plutonium Compounds	\$616,328
07-ERD-049	Controlling the Structure of a Quantum Solid: Hydrogen	\$202,572

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LLNL - L. Livermore National Lab

Project ID	Project Name	FY Total
07-ERD-050	Novel Approach to Investigate the Mechanism of Yersinia Pestis Pathogenicity in Real-Time and at Single-Cell Level	\$402,593
07-ERD-053	Microarrays + NanoSIMS: Linking Microbial Identity and Function	\$252,684
07-ERD-055	Ultrahigh-Velocity Railgun	\$578,506
07-ERD-056	Finding and Characterizing Rare Events in Two Next-Generation Particle Astrophysics Experiments	\$475,486
07-ERD-057	Software Security Analysis	\$429,264
07-ERD-061	Verification and Validation of Radiation Hydrodynamics for Astrophysical Applications	\$77,994
07-ERD-063	Storage-Intensive Supercomputing	\$1,000,555
07-ERD-064	Fossil Fuel Emission Verification Capability	\$492,929
07-ERI-001	Identification of Pathways Critical to Quorum Sensing and Virulence Induction	\$179,749
07-ERI-002	Accelerator Mass Spectrometry of Strontium-90 for Biomonitoring and Human Health	\$329,919
07-ERI-004	A Plasma Amplifier toward Zettawatt Laser Powers	\$201,553
07-ERI-005	Cosmochemical Forensics	\$273,878
07-LW-006	Helium Burning in Steady State and Explosive Nucleosynthesis	\$210,769
07-LW-037	Uncovering Supersymmetric Leptons at the Large Hadron Collider	\$221,100
07-LW-041	Magnetism in Semiconductor Nanocrystals: New Physics at the Nanoscale	\$224,627
07-LW-043	Quantification of Radiation-Induced Protein Expression	\$223,582
07-LW-056	The Structure and Transport of Water and Hydrated Ions within Hydrophobic, Nanoscale Channels	\$229,567
07-LW-086	Fourier Transform Holography with Coded Apertures	\$230,525
07-LW-098	Stem Cell Fate Decisions	\$187,320
08-ERD-001	Dynamics of Material Motion and Transformation following Localized Laser-Energy Deposition in Transparent Dielectrics	\$662,594
08-ERD-002	A New Selectable Marker System for Genetic Studies of Select Agent Pathogens	\$359,994
08-ERD-003	Resolving Inconsistencies in Astrophysical Absorption Spectroscopy	\$300,143
08-ERD-004	High-Energy-Density Experiments on Short-Pulse X-Ray Light Sources	\$648,237
08-ERD-005	Nonequilibrium Electron Dynamics in Warm Dense Matter	\$344,649
08-ERD-006	Tailored Ceramics for Lasers	\$201,789

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LLNL - L. Livermore National Lab

Project ID	Project Name	FY Total
08-ERD-008	Studying Reactions on Excited Nuclear States	\$243,581
08-ERD-011	Probabilistic Inference of Metabolic Pathways from Metagenomic Sequence Data	\$320,713
08-ERD-014	New Algorithms to Scale Domain Decomposition up to Blue Gene Architectures	\$306,808
08-ERD-016	Broadband Heterodyne Infrared Spectrometer: A Path to Quantum Noise-Limited Performance	\$274,974
08-ERD-017	Exploration of Laser-Plasma Interactions for High-Performance Laser-Fusion Targets	\$420,137
08-ERD-018	Towards a Universal Description of Nuclei with Monte Carlo Methods	\$339,915
08-ERD-019	Innovative Divertors for Future Fusion Devices	\$251,065
08-ERD-020	The Elegant Molecular Syringe: Characterizing the Injectisome of the Yersinia pestis Type III Secretion System	\$213,421
08-ERD-022	Robust Ensemble Classifier Methods for Detection Problems with Unequal and Evolving Error Costs	\$474,358
08-ERD-023	Enhanced Event Extraction from Text Via Error-Driven Aggregation Methodologies	\$482,443
08-ERD-024	High-Temperature Thermal X-Radiation Sources at Short-Pulse Lasers	\$618,220
08-ERD-025	Viability-Based Detection Methods for Pathogens in Complex Environmental Samples	\$309,782
08-ERD-026	Scalable Methods for SN Transport on Massively Parallel Architectures	\$599,108
08-ERD-027	Advanced Computation and Experimental Analysis of Plasma Equations of State and Transport	\$231,313
08-ERD-028	Image Segmentation and Feature Quantification for Advanced Radiography and Tomography	\$372,757
08-ERD-029	Direct Continuum Simulation of Collective Void Nucleation and Growth in a Plastic Medium	\$45,600
08-ERD-030	Rapid Radiochemical Separations for Investigating the Chemistry of the Heaviest Elements	\$392,861
08-ERD-031	Efficient Numerical Algorithms for Vlasov Simulation of Laser-Plasma Interactions	\$354,403
08-ERD-032	Fundamental Mechanisms Driving the Amorphous-to-Crystalline Phase Transformation	\$317,872
08-ERD-033	Strain-Rate Effects on Plasticity and Defects	\$140,394

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Project ID	Project Name	FY Total
08-ERD-034	New Physical Mechanisms for Next-Generation Fusion-Laser Dynamic Sensors and Diagnostics	\$358,960
08-ERD-035	Impurity and Alloying Effects on Material Strength from First Principles	\$455,483
08-ERD-036	Understanding Viral Quasispecies Evolution through Computation and Experiment	\$425,662
08-ERD-037	Important Modes to Drive Protein Molecular-Dynamics Simulations to the Next Conformational Level	\$185,390
08-ERD-038	Do Brittle Metals Change Character under Extreme Shock Conditions?	\$362,561
08-ERD-039	Direct Simulation of Dynamic Fracturing during Carbon Storage and Prediction of Potential Storage Failures	\$223,708
08-ERD-040	Characterization of Short-Pulse Laser Interaction with Solid Matter	\$79,953
08-ERD-042	A Hydrogen-Oxygen-Argon Internal Combustion Engine System: The Mechanical Equivalent of a Fuel Cell	\$300,823
08-ERD-043	Tracing the Shadows of Planetary Systems	\$793,793
08-ERD-044	Point-of-Care Diagnostic for Foot-and-Mouth Disease Virus	\$344,092
08-ERD-046	Linking Quantum Chromodynamics to Experimental Data	\$503,348
08-ERD-048	3D-Plus-Time Analysis of Plasma Microturbulence Simulations	\$227,730
08-ERD-049	Cryogenic Bolometers for Double Beta-Decay Experiments	\$203,590
08-ERD-050	Shock Ignition: A New Approach to High-Gain and -Yield Targets for Stockpile and Energy Applications	\$370,438
08-ERD-051	Cadmium-Zinc-Telluride Sandwich Detectors for Gamma Radiation	\$366,121
08-ERD-052	Partition-of-Unity Finite-Element Method for Large-Scale Quantum Molecular Dynamics on Massively Parallel Computational Platforms	\$408,475
08-ERD-053	High-Resolution Projection Micro-Stereolithography for Advanced Target Fabrication	\$505,807
08-ERD-054	Measurement and Prediction of Laser-Induced Damage in the Presence of Multiple Simultaneous Wavelengths	\$2,111,086
08-ERD-055	Chemical and Structural Modification and Figure Control during Glass Polishing	\$2,005,972
08-ERD-056	Toward More Intrinsically Secure Nuclear Fuel Cycles	\$981,007
08-ERD-057	Physics of Local Reinitiation and Morphological Evolution of Mitigated Sites on Ultraviolet Optics	\$2,028,393
08-ERD-058	Physics and Chemistry of Planetary Interiors: A New Generation of Condensed-Matter Experiments	\$1,014,221

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LLNL - L. Livermore National Lab

Project ID	Project Name	FY Total
08-ERD-062	Mesoscale Studies of Hydrodynamic Instability Growth in the Presence of Electric and Magnetic Fields	\$113,211
08-ERD-063	Model-based Flaw Localization from Perturbations in the Dynamic Response of Complex Mechanical Structures	\$159,433
08-ERD-064	Hybridization, Regeneration, and Selective Release on DNA Microarrays	\$197,676
08-ERD-065	Coordinated Analysis of Geographic Indicators for Nuclear Forensic Route Attribution	\$267,010
08-ERD-066	Nuclear Astrophysics at the National Ignition Facility: Feasibility of Studying the Reactions of the Stars on Earth	\$222,432
08-ERD-067	Hierarchical Vehicle Activity Models for Site Security	\$327,961
08-ERD-069	Supernova Experiments Preparation for NIF	\$125,674
08-ERD-070	An Experimental and Theoretical Approach to Visualize Dechlorinating Bacteria in Porous Media	\$229,148
08-ERD-071	New Molecular Probes and Catalysts for Bioenergy Research	\$141,622
08-ERI-001	Micro-Targets for High-Energy-Density Physics: Three-Dimensional Simulations of Ultra-Intense Laser-Absorption Experiments	\$55,345
08-ERI-002	X-Ray Scattering on Compressed Matter	\$266,791
08-ERI-004	Proton Fast Ignition	\$289,430
08-FS-001	Collection of Solid Debris on NIF for Radiochemical Diagnostics and Measurements	\$69,655
08-FS-002	Modeling Cyber and IO-threat Mitigation for Space ISR Infrastructure	\$37,074
08-FS-003	Fast Running Tools for Explosions in Urban Environments	\$97,569
08-FS-004	Modeling Threats to U.S. Intelligence, Surveillance and Reconnaissance Capabilities	\$76,300
08-FS-005	A Posteriori Error Calculation of Hydrodynamics Simulations using Adjoint Methodologies	\$74,517
08-FS-006	Distributed Data-Flow for in-situ Visualization and Analysis at Petascale	\$123,995
08-FS-007	IP Profiling through Network Service Cluster Membership	\$125,043
08-FS-008	Large-Scale Epidemiological Model of Human Diseases	\$30,272
08-FS-009	Computational Biology for Target Discovery and Characterization	\$56,159
08-FS-010	A Micro-Optical-Mechanical Photoacoustic Spectrometer	\$117,579
08-FS-011	Understanding Virulence in the Brucellae and Francisellae: Towards Efficacious Treatments for Two Potential Biothreat Agents	\$85,709
08-FS-012	Confinement of Hydrogen in Multiwalled Carbon Nanotubes	\$31,941

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LLNL - L. Livermore National Lab

Project ID	Project Name	FY Total
08-FS-013	Computational Biology for Drug Discovery	\$49,473
08-FS-014	Feasibility of n-Gram Data Structures for Next-Generation Pathogen Signature Design	\$109,810
08-FS-016	Multi-scale Multi-physics Membrane Technology	\$100,822
08-LW-004	Conductivity in Warm Dense Matter	\$219,217
08-LW-015	Probing the Organization of the Cell Membrane	\$212,302
08-LW-025	Regulation of Yersina Pestis Virulence by Autoinducer-2 Mediated Quorum Sensing	\$227,248
08-LW-027	Bacteria-Mineral Interactions on the Surfaces of Metal-Resistant Bacteria	\$219,981
08-LW-052	Zero-Order Phased Fiber Arrays	\$224,107
08-LW-058	Relativistic Electron-Positron Jets	\$232,701
08-LW-068	Kinetics of Weakly Fluctuating Crystal Surfaces: Beyond Classical Concepts	\$232,407
08-LW-070	Plasma Waveguide for Electron Acceleration	\$217,088
08-LW-100	Prediction of Patient Response to Chemotherapy using Drug Microdosing	\$174,574
08-SI-001	Fast-Ignition Proof-of-Principle Experiments	\$2,591,037
08-SI-002	The Viral Discovery Platform	\$2,916,202
08-SI-004	Nanomaterials for Fusion Application Targets	\$2,460,948
Total # of Projects for LLNL:	176	Total Cost for LLNL: \$91,535,746

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NREL - National Renewable Energy Lab

Project ID	Project Name	FY Total
06001010	LDRD Closed Project Costs	\$7,694
06001099	LDRD Proposal Peer Reviews	\$11,778
06270701	Design, Synthesis, and Characterization of Plasmonis Structures for Solar Energy Conversion and Solid-State Lighting	\$157,151
06270702	Developing Next Generation Concepts for Consolidated Bioprocessing Microorganisms Using Systems Biology	\$159,052
06270703	Two-Electron Catalysis Coupled to Excitonic Semiconductors: Nanostructured PhotoElectroCatalytic Systems	\$142,366
06270704	Isolation and Separation of Single-Walled Carbon Nanotubes (SWNTs) via Engineered Proteins	\$179,314
06270705	Novel in vitro Hydrogenase-Dependent Production of H ₂ Coupled Directly to Light-Induced Charge Separation Using Only Photosystem	\$169,353
06270801	Oriented Nanotube Arrays for Advanced Lithium-Ion Batteries	\$82,402
06270802	Tailoring Carbon Nanotube and Hydrogenase Bio-Hybrids for Design of Novel H ₂ Electrodes	\$140,799
06270803	Catalyst Improvement for Solar Biohydrogen Production	\$65,564
06270804	Understanding Plant Cell Wall Deconstruction Process in Biomass Decaying Community Using Proteomics and Bioimaging Approaches	\$123,899
06270805	Lessons Learned from Zinc-Finger Proteins: New Thoughts Towards New Technologies in Nanoscience	\$93,053
06270806	Molecule/Plasmon Hybridization for Optimization of Light Absorption and Energy Flow in High Efficiency Solar Cells	\$101,592
06270807	Oriented Nanotube Arrays for Advanced Supercapacitors	\$111,091
06510701	Consolidated Bioprocessing (CBP) of Cellulosic Biomass: Physiologically Paired Microbial Hosts and Cellulase Enzymes	\$154,210
06510801	Obtaining Cell Wall Composition of a Single Cell: Integration of Pulsed Sample Introduction with High Sensitivity Laser Ionization Mass Spectrometry	\$110,847
06510802	Nanoscale Materials for Thermal Storage	\$124,475
06510803	Developing Next Generation Biobutanol-Producing Microorganisms Using Systems Biology	\$164,877
06510804	Meso-Scale Computational Modeling of Polysaccharides in Plant Cell Walls	\$153,631
06510805	Development of a Comprehensive High-Throughput Technique for Assessing Lipid Production in Algae	\$243,605
06520601	Thin-Film Microelectronics for Rapid Gene Expression Analysis	\$229,981
06520602	Unconventional Indium-Free Transparent Conductors	\$159,149

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NREL - National Renewable Energy Lab

Project ID	Project Name	FY Total
06520603	A Critical Examination of the Intermediate Band Concepts for Ultra-High Efficiency Quantum Dot Solar Cells	\$81,868
06520604	Modified Inorganic Nanostructures for Organic Photovoltaics	\$172,760
06520701	Design and Development of Lattice-Matched InGaN	\$210,480
06520801	Semiconducting and Metallic Nanowire Networks for Transparent Electrical Contacts	\$107,355
06520802	Integrated Rectenna Devices for Solar Energy Conversion	\$102,425
06540801	Development of Vehicle to Grid (V2G) Systems to Support Renewable Technologies	\$159,833
06550701	Development of Self-Learning Building Controls with Initial Application for Lighting Control	\$133,202
06560502	Prototype Renewable Planning Model (RPM)	\$191,795
06560801	Solid Oxide Fuel Cells for Combined Tar Reforming and Electricity Production	\$201,310
06590701	Designing New Materials for Water Splitting from Solid Solutions of Semiconductor Compounds	\$179,173
06590802	Development of Novel Thin-Film Solar Energy Conversion Materials	\$139,663
06640701	Strategic Analysis Market Modeling Capability	\$177,259
06RF0701	Properties of Refractory Metal Doped Transparent Conducting Oxides	\$62,045
06RF0702	Third Generation Direct Solar Photon Conversion to Fuels and Electricity	\$90,278
06RF0703	New Microbial Biohydrogen Research Approaches	\$76,064
06RF0704	Exploration of Novel Optimization Techniques for Identifying Materials with Prescribed Physical Properties	\$80,435
06RF0801	Time-Resolved Microwave Conductivity (TRMC) Function Temperature	\$13,823
Total # of Projects for NREL:	39	Total Cost for NREL: \$5,065,651

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NTS - Nevada Test Site

Project ID	Project Name	FY Total
H1701028	Nanosecond Single Photon Detection of Diffracted X-rays	\$192,292
H1701057	Variable Framing Camera	\$6
H1701067	OPTICAL PIN MEASURING MACHINE	\$4,259
H1701077	Nanosecond Single_photon Detection of Diffracted X-rays	\$38
H1701107	Injector Design for a 10-picosecond Electron Accelerator	\$-18,010
H1701138	Optimized Scintillator Geometry	\$35,348
H1701167	Commercial Sensor-based Digital Framing Camera	\$359
H1701187	Stereo Borescope	\$126
H1701208	Time-Dependent Neutron Imaging on a Dense Plasma Focus	\$260,119
H1701228	Picosecond time-resolved electron diffraction of phase transitions	\$184,196
H1701237	Exploring Phase Transition/Shock Dynamics by THz Spectroscopy	\$-3,101
H1701278	Dynamic Optical Adjustment of a PDV Signal in Real Time	\$192,127
H1702028	Terahertz Time-Domain Spectroscopy (THz-TDS) and Imaging	\$235,670
H1702057	Applications of semiconducting nanowire to phototube	\$0
H1702088	A miniature dual use streaking camera and photodetector	\$133,373
H1702108	Driving the Ultrafast Streak Camera	\$197,881
H1702118	Direct Imaging using Flash Memory Chips	\$3,721
H1702157	RADOPTIC SENSOR	\$927
H1702168	RADOPTIC SENSORS (PHASE 2)	\$281,022
H1703017	Embedded Piezoelectric Microcantilever Array (EPMA)	\$-1,831
H1703057	Zero Wind Plume Model	\$371
H1703058	High Band-pass PMT Developmen	\$118,308
H1703078	Many Point Velocimetry using Heterodyne Techniques	\$191,559
H1703118	DPF LOAD FOR ATLAS	\$85,651
H1703148	Design of Neutron Resonance Spectroscopy Exp.	\$123,637
H1703428	Detection of Chlorine Gas	\$120,414
H1704037	Aerial Neutron Detection - Phase II	\$11,251

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NTS - Nevada Test Site

Project ID	Project Name	FY Total
H1704038	Wavelet Optimization for Detection and Spectral ID	\$130,855
H1704157	Networked UGV Based Data Acquisition	\$2,473
H1704158	CeBr3 as a Room Temperature High Resolution Gamma-Ray Detector	\$240,795
H1704168	Handheld Neutron Spectrometer	\$224,309
H1704197	Fissile Material Detection using Borated Paint	\$403
H1704248	Dual neutron-gamma detectors as neutron energy spectrometers	\$198,586
H1704287	Quantum Wire II	\$-138
H1704298	Neutron Active Interrogation using a Small Neutron Generator	\$186,544
H1704307	Field Testing a Gamma-Ray Telescope for Search and CM Missions	\$39,674
H1704328	Information Security Tactical Operations	\$92,397
H1704368	Concealed Directional Detector Phase II	\$110,983
H1704467	An Ultra-sensitive Neutron Spectrometer	\$5,052
H1704618	Advanced Microwave Antenna Array and Multiband Receiver	\$44,107
H1705018	Frequency modulated detection of phosphorescence surfaces	\$112,526
H1705028	URANIUM VISUALIZATION	\$103,372
H1705058	Radiative decay engineering for improved scintillators	\$143,665
H1705078	Laser plasma vapor detection	\$183,288
H1705087	Frequency Modulated Detection of Phosphorescence on Surfaces	\$525
H1705097	Repetitive Motion Imaging	\$0
H1705128	Fiber bragg grating shock sensors	\$138,079
H1705167	Uranium Visualization Chemistry	\$664
H1705207	Conducting Polymers for Neutron Detection	\$25,945
H1705218	MICROWAVE DIAGNOSTIC	\$66,098
H1705227	DNA Capture Materials	\$5,610
H1705307	Gel/Liquid Bubble Neutron Detector	\$369
H1705338	Minaturizing mass spectrometers	\$186,410
H1705507	Sintered Optical Materials for Shock Physics Experiments	\$-5,330

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NTS - Nevada Test Site

Project ID	Project Name	FY Total
H1705577	Room-Temperature, High-Resolution Spectroscopy on Nanostructures	\$0
Total # of Projects for NTS:		55
Total Cost for NTS:		\$4,586,974

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ORNL - Oak Ridge National Lab

Project ID	Project Name	FY Total
32102200	A Novel Radio-Luminescent Glass for Safe User Applications	\$44,700
32102205	Carbonate Thermochemical Cycle for the Production of Hydrogen	\$88,598
32102213	Taming Photosynthesis Regulation through Genomics for Direct Synthesis of Ethanol from Carbon Dioxide and Water	\$7,308
32102214	Development of an Advanced Surface-Enhanced Raman Spectroscopy for the Identification and Characterization of Pollen	\$14,771
32102217	Mapping Carrier Distributions and Photovoltaic Activity in Nanophase Materials by Electrical Dissipation Microscopy	\$31,923
32102218	Organic Magnets: Phenomenological and First-Principles Approaches to Layered Bimetallic Oxalates	\$92,939
32102219	A Hybrid Diffusion Model Driven by Chemoattractants	\$54,987
32102220	Plasma Etching and Simulation of Electron Scattering in Nanoscale Copper Interconnects to Minimize Size Effects	\$34,032
32102222	A Proof-of-Concept Implementation for a USA National Phenology Network Cyberinfrastructure	\$29,913
32102223	Can the Quantum Confinement Effect Be Exploited for Spin Injection in Organic Spintronics?	\$44,982
32102224	In Situ Nanopatterning of Single-Crystal Multiferroics by Strain for Terabit-Scale Data Storage	\$98,392
32102227	Destroying Pathogenic Bacteria using Targeted Nanoparticles	\$75,904
32102229	Photon-Assisted Thermoelectric Devices	\$24,061
32102230	Photocatalytic Conversion of CO ₂ : An Alternative to Storage-Based Sequestration	\$41,966
32102232	In Situ Studies for Ductility Improvement of Bulk Metallic Glasses	\$39,804
32102233	Molecular Engineering of Core-Shell Interfaces? Toward Controllable, Production of Brighter, Optically Tunable Quantum Dots.	\$84,922
32102236	Development of a Hybrid Computational Phantom Model	\$79,889
32102237	Fundamental Studies of CO ₂ -Coal Interactions using Novel, Neutron Scattering Techniques at Conditions Relevant to Subsurface Sequestration	\$111,480
32102238	Nanostructured, Three-Dimensional Electrodes for Enzyme Fuel Cells	\$124,956
32102240	An Innovative Low/High-Temperature, Repetitive Pressure-Pulse Apparatus for Cavitation Damage Research	\$48,995
32102241	Computing the Electric Dipole Moment of the Neutron and the Schiff Moment of the Nucleus	\$77,911
32102242	Turbopump Concentration of Heavy Atoms and Molecules	\$60,083

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ORNL - Oak Ridge National Lab

Project ID	Project Name	FY Total
32102243	Deterministic Growth of Oxide Nanostructures by Pulsed-Laser Deposition	\$131,320
32102244	Quantitative Imaging of Subcutaneous Veins with Multispectral Illumination and Three-Dimensional Modeling	\$127,505
32102245	Real-Time Quantitative Phase and Fluorescence Biological Microscopy by Digital Holography	\$97,726
32102246	Regeneration for Energy Efficient Fluid Power Systems	\$165,961
32102247	Evanescent Power Transfer for Electric Vehicles	\$174,649
32102248	Atomic-Level STEM Imaging of Bias-Induced Phase Transformations: Applications to Information Technology	\$27,375
32102249	Linkage Disequilibrium as an Analytical Tool for Gene Discovery	\$149,451
32102250	Low-Cost, Multicrystalline Silicon for Photovoltaics	\$171,669
32102251	Tracing Nanoparticle Transport in Porous Media by Neutron Radiography and Small-Angle Neutron Scattering	\$135,111
32102252	Development of a Novel Sensor System for Biomarkers of Physiological and Pathological Processes in Biomedicine	\$124,937
32102253	Developing a Field-Expedient Testing Protocol for Concrete Materials	\$27,669
32102254	Nanostructured Materials for Enhanced Radiometric Forces at Atmospheric Pressure	\$139,934
32102255	Systems Neurogenetics of Methyl Mercury Exposure	\$27,815
32102256	Electron Transport at the Nanoscale: Grain Boundary Resistance in Interconnects	\$149,768
32102257	An All-Optical Plasmonic Pump for Integrated Applications	\$135,339
32102258	Root Causes of Circumferential Cracking of Waterwall Tubes in Supercritical Boilers	\$27,907
32102259	Development of a Device for Low-Cost, In-Reactor Loading of Materials	\$156,114
32102260	Online Software Suite for Visualization, Analysis, Management, and Processing of Nuclear Masses	\$16,593
32102261	Development of Inorganic Membranes for Water Reclamation from Wet Gas Streams: An Opportunity to Simplify Water Management Operations	\$94,282
32102262	A New Method for Controlling Densification during Chemical Vapor Deposition Production of Carbon Composites	\$68,589
32102263	Understanding Why and How Thiolate Groups Stabilize Gold Nanoparticles	\$27,977
32102264	Mapping Quantitative Trait Loci that Regulate Telomere Length using Collaborative-Cross Mice	\$98,017

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ORNL - Oak Ridge National Lab

Project ID	Project Name	FY Total
32102265	Hydration-Driven Processes in Bioenergy: Testing a Novel, Neutron-Scattering Approach	\$15,747
32102266	Novel, High-Power Cathodes for Lithium-Ion, Rechargeable Batteries	\$76,884
32102267	Novel Infrared-Processed Titanium Composites for High-Temperature Galling Resistance	\$86,655
32102268	Tip-Enhanced Optical Assembly of Plasmonic Nanostructure	\$63,501
32102269	Novel Method to Achieve High-Resolution Neutron Microscopy	\$29,389
32102270	Molecularly Imprinted Ionogels as Optosensory Platforms	\$33,906
32102271	IP Policies and Impacts on Patent Licensing and Technology Transfer for Bioenergy Research Centers	\$27,991
32102272	Laser-Enhanced, Nanoscale Focused, Electron-Beam-Induced Processing	\$49,884
32102273	Actuation and Control of Wearable Robotics	\$117,046
32102274	Surface Interactions of Radioactive Particles and Radioactivity Effects on Transport and Deposition	\$50,298
32102275	Examine the Feasibility of a Reactor Powering the Earth's Geomagnetic Field	\$27,973
32102276	The Graphics Processing Unit? Enhanced Computer for Large-Scale Text Mining	\$35,796
32102277	Development of a Microfluidic Device to Mimic Vasculature for Studying the Mechanism of Tumor Metastasis	\$58,805
32102278	Novel, Hafnium-Doped Al ₂ O ₃ Permeation Barriers for Oxygen and Hydrogen Barrier Applications	\$78,914
32102279	Novel Method for Three-Dimensional, Depth-Resolved, Imaging of Highly Scattering Samples	\$52,176
32102280	Nonlinear, Nanomechanical Oscillators for Ultrasensitive Inertial Detection	\$15,824
32102281	In Situ Neutron Imaging of Roots and Rhizosphere Water Exchange	\$11,379
32102282	Ordered Nanoporous Hyperadsorptive Preconcentrators of Threat Agents	\$29,583
32102283	Optical Resonance Disk-Based Infrared Thermal Detectors	\$17,718
32102284	Fabrication of Single-Crystal Thin Films: The Missing Link in Understanding High-T _c Superconductivity in Iron Pnictides	\$21,468
32112154	Infrastructure Development for Neutron Scattering for Biomembranes and Biomimetic Membranes	\$43,964
32112155	Synthesis and Neutron-Scattering Characterization of Ordered Self-Assembled Polymer Nanostructures and Bio-Membranes	\$63,547

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Project ID	Project Name	FY Total
32112158	Systems Biology of the Mammalian Cilium: A Cellular Organelle Essential for Human Health and Development	\$39,988
32112165	Multi-Component Fuel Spray Simulation Tools for Alternative Fuels	\$26,873
32112176	Combustion of Nanostructured Metal Fuels: Towards Designing Optimized Combustion Chambers	\$30,023
32112183	Exploring Reconfigurable Computing Programming Models to Accelerate High-Performance Computing Applications	\$100,776
32112184	Theoretical and Computational Methodologies and Tools for Second-Generation Integrated Fusion Simulation	\$116,753
32112185	Novel Approaches for Uncovering Total Environmental Gene Expression Patterns	\$629,130
32112187	Predictive Simulation and Virtual Design of High-Speed, High-Density Molecular and Nanoscale Sensors and Devices	\$360,579
32112188	Storage Virtualization: An Integrated Approach to Machine-Room Storage Management	\$282,783
32112189	Virtualized System Environments for Petascale Computing and Beyond	\$366,334
32112190	Petascale Computing in Nanoscience on 100,000+ Cores	\$367,762
32112191	Modeling Cellular Mechanisms for Efficient Bioethanol Production through Petascale Comparative Analysis of Biological Networks	\$371,817
32112192	High-Temperature, High-Pressure Studies of Dynamics of Fluids in Nanopores using the Spallation Neutron Source Backscattering Spectrometer	\$262,173
32112193	An Evolutionary Framework for Porting Applications to Petascale Platforms	\$300,804
32112194	A Robust Polymer Scaffold System for Bio-Inspired Membranes	\$314,134
32112195	Apertureless Near-Field Desorption/Ionization Mass Spectrometry for Nanoscale Chemical Imaging at Atmospheric Pressure	\$279,396
32112196	Probing Molecular Interaction Between Microbial-Cell Protein and Mineral Surfaces With Neutrons	\$274,920
32112197	Systemic Approaches in Recombinant Zymomonas mobilis to the Regulation of Ethanol Fermentation	\$350,739
32112198	Unraveling the Regulatory and Biosynthetic Genes that Control Cellulose Production in the Model Bioenergy Crop Populus	\$248,540
32112199	High-Throughput Neutron Crystallography for Macromolecular Structure, Function, and Design	\$368,302
32112200	Magnetic Structure Under Simultaneous Ultrahigh-Pressure and High-Temperature Conditions: 200 kbar and 1500 K	\$264,059
32112201	NanoPower - Nanocatalytic Direct-Fuel Thermoelectric Generator	\$331,493

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Project ID	Project Name	FY Total
32112202	A Helicon Ion Source for the Spallation Neutron Source Power Upgrade	\$176,943
32112203	Waveguide Entangled Photon Sources for Quantum Information	\$345,793
32112204	Fundamental Mechanisms of Self-Assembly of Ordered Nanostructures in Heterogeneous Ceramic Materials	\$250,529
32112205	A Novel Process of Thick Nanocomposite Surfaces for Defense Applications	\$299,458
32112206	Imaging Energy Materials in operandi with Atomic Resolution Scanning-Transmission Electron Microscopy	\$248,379
32112207	Energy Flow and Conversion on the Molecular Level: A View at Molecular Photoelectromechanical Machines	\$150,120
32112208	Three-Dimensional, Aberration-Corrected, Scanning Transmission Electron Microscopy for Studying Microbiological Systems	\$100,082
32112209	Advanced Nuclear Fuel Examination and Testing	\$356,702
32112210	Cognitive Radio for Transformational Logistics	\$338,719
32112211	A Hybrid Hydrogen Storage-Generation System Based on Bi-Functional Nanostructured Photocatalysts	\$290,579
32112212	Modular Utility-Scale Power Converters and Controllers for the Next-Generation Grid	\$198,245
32112213	Alternative Feedstocks for the Petrochemical Industry from No-Sulfur-Added Biomass Lignins	\$339,599
32112214	Developing a Science Base for Fuel Reprocessing Separations in the Global Nuclear Energy Partnership	\$299,050
32112215	Electricity and Biohydrogen Production via a Systems-Level Understanding of Microbial Fuel Cells	\$101,074
32112216	Smart Materials Toward a New Paradigm of Super-Efficient Separations Using only Energy Input: Conformational Switching Based on Magnetic Nanoparticles	\$225,178
32112217	Design of Point-Defect Trapping Centers in Nanostructured Nickel for Advanced Nuclear Applications	\$278,183
32112219	Nanoparticle Phase Change Materials: The Nanoscale Science Basis for Gigajoule Energy Storage	\$282,878
32112220	Antiferroelectric Thin-Film Capacitors for Ultrafast High-Power Energy Storage	\$288,104
32112221	Nanostructured Thermoelectrics for Power Generation: Smaller is Cooler	\$216,682
32112222	Microfluidic Platform for Individual Microbe Capture, Cultivation, and Selective Release	\$420,603

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Project ID	Project Name	FY Total
32112223	Methodological Development of Computer Simulation in Molecular Biophysics	\$471,739
32112224	Development of a Global Advanced Nuclear Fuel Rod Model	\$411,038
32112226	Molecular-Fragment Database for De Novo Structure-Based Design	\$200,037
32112227	Transfer of Vertically-Aligned Carbon Nanotube Arrays for Sensors and Thermal Management	\$42,721
32112228	Structure of Fluids Confined in Nanoporous Materials using Neutron Scattering	\$109,987
32112229	Neutron Scattering Study of Magnetic and Spin Dynamic Behavior in Amine-Stabilized Transition Metal and Transition Metal Oxide Nanoparticles	\$281,677
32112230	Nanocomposites for Advanced Thermoelectrics	\$389,455
32112231	Irradiation of Advanced Light Water Reactor Fuel in the High Flux Isotope Reactor	\$546,910
32112232	Rotating Solid Target Design Development for Spallation Neutron Source	\$240,612
32112233	Pushing the Limits: High-Impact Neutron Protein Crystallography	\$140,180
32112234	Single Molecular Imaging and Spectroscopy of Adsorbed Molecules	\$349,644
32112235	Preparing for New Programming Languages for Ultrascale Applications	\$326,604
32112236	A Petascale Parallel Programming Environment for Scientific Software	\$301,580
32112237	Global Climate Feedbacks and the Development of Biofuel Climate Scenarios	\$338,113
32112238	Neutron Structural Virology: Assembly, Assault and Infection	\$271,957
32112239	Overcoming the Barrier to Ultrascale Climate Simulation	\$344,939
32112240	Cost and Effectiveness of Fault Tolerance in Quantum Computing	\$307,820
32112241	Bandgap Narrowing of Oxide Semiconductors Using Noncompensated n-p Co-Doping for Enhanced Solar Energy Utilization	\$240,930
32112242	Host Genetic Diversity as a Variable Selection Environment for the Gut Microbiome	\$330,225
32112243	Automated Freeform Construction Technologies and Materials	\$462,729
32112244	Nanostructured Mesoporous Photocatalysts for CO2 Reduction	\$305,164
32112245	Scale-Dependent Metrics for Bioenergy: Land-Nutrient-Water Interactions under Future Energy Scenarios	\$324,745
32112246	Possible Impacts of Relatively Severe Climate Change	\$245,431
32112247	Novel Alternative Signatures for Radiation Detection	\$278,324
32112248	High-Performance Proton-Conducting Fuel Cell Electrolytes Based on Task-Specific Protic Ionic Liquids	\$294,719

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Project ID	Project Name	FY Total
32112249	Supra-Macromolecular Assembly of Artificial Photoconversion Units	\$282,110
32112250	Inelastic Neutron Scattering from Magnetic Heterostructures	\$204,773
32112251	Synthesis, Assembly, and Nanoscale Characterization of Confined, Conjugated and Charged Polymers for Advanced Energy Systems	\$254,595
32112252	A Knowledge Discovery Framework for America's Transportation System	\$353,146
32112253	Manufacturable Nanotransistors for Advanced Analog Circuits	\$394,774
32112254	Imaging of Molecular Structure and Electron-Driven Dynamics	\$200,191
32112255	Joining Ultrascale Computing and Neutron Scattering Studies to Enable Revolutionary New Materials Development	\$295,253
32112256	Revolutionary Method for Increasing Efficiency of White-Light, Quantum-Dot, Light Emitting Diodes	\$357,644
32112257	An Experimental, Theoretical, and Molecular-Modeling Approach to Characterize the Structure and Dynamics of Charged PAMAM Dendrimers in Solution	\$286,407
32112258	Carbon Drivers of the Microbe-Switchgrass Rhizosphere Interface	\$319,552
32112259	Mapping the Protein Structure-Function-Dynamics Landscape	\$121,378
32112260	Enabling Ubiquitous Information Flows: Real-Time Data-Streams Instantiation and Agent-Based Forward-Analysis	\$374,986
32112261	Design, Simulate, and Prototype Facilities for Macroscale Experiments of Ecosystem Response to Climate Change	\$344,540
32112262	Unmixed Combustion for High-Efficiency Energy Conversion	\$351,168
32112263	Stable-Isotope Approach to Nitrogen Cycling Analysis	\$289,993
32112264	Investigation of Unique ORNL Resources and Methodologies for Biomedical Applications	\$83,869
32112265	Drawn Field Emitters, Vertically Aligned Carbon Nanotubes, and Related Nanostructures	\$130,482
32112266	Investigating the Role of Physical Interactions and Block Sequence Tailoring on Macromolecular Self-Assembly through Micellar Systems	\$100,268
32112267	Materials Behavior Underlying the Electrochemical Performance of Advanced Batteries	\$775,998
32112268	Attoliter Droplets On-Demand in Nanochannel Arrays: New Opportunities for Investigating Chemical Reactivity and Catalysis in Nanoscale Reactors	\$125,284
Total # of Projects for ORNL:	152	Total Cost for ORNL: \$28,694,641

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PNNL - Pacific Northwest National Lab

Project ID	Project Name	FY Total
PN05019/1847	Computational Biology and Bioinformatics Tools for Understanding the Role of Membrane Proteins in Diurnal and Circadian Processes of Prokaryotes	\$100,922
PN05025/1853	Systems Analysis of the Dynamics of Membrane Architecture, Composition, and Function -- Proteomic, Metabolomic, and Metallomic Characterization	\$155,800
PN05034/1862	Discovery of a Biomarker Signature in Response to Nanoparticle Exposure	\$63,716
PN05035/1863	Discovery of Novel Volatile Organic Metabolic Signatures for Early Immune Response or Inflammatory Conditions	\$64,726
PN05037/1865	Early, Validated Biomarkers of Infectious Diseases in Humans	\$75,206
PN05038/1866	Ecophysiological Investigation of Cyanobacteria Using Controlled Cultivation	\$83,342
PN05046/1874	Fundamental Investigations of Heterogeneous Catalysis Using Steady-State Isotopic Transient Kinetic Analysis	\$97,547
PN05047/1875	Fundamental Understanding of Catalytic Depolymerization of Cellulose	\$139,541
PN05064/1892	Modeling of Energy Transfer and Associated Variance in Gamma Ray Detector Materials	\$89,453
PN05068/1896	Morphological, Functional and Redox Studies of Synechocystis 6803 and Cyanoshece 51135 Bacterial Membrane Complexes by Methods of Electron Microscopy	\$57,913
PN05075/1903	Non-Invasive Real-Time In Situ Spectroscopic Monitoring of Macrophage-Particulate Matter Interactions to Define Biological Pathways	\$43,001
PN05080/1908	Particulate Matter Exposure and Respiratory Effects Biosignature Discovery	\$38,178
PN05091/1919	Rfr-Domain Protein Family Characterization in Cyanoshece 51142	\$65,586
PN05097/1925	The Dynamic Changes in the Molecular Interactions Along the Circadian Rhythm	\$61,592
PN06007/1936	Affinity Reagents Based on Novel Molecular Scaffolds	\$172,635
PN06010/1939	Biomaterials as Sequestering Agents for Radionuclides and Toxic Metals	\$185,444
PN06011/1940	Bringing Water into an Integrated Assessment Framework	\$69,883
PN06014/1943	Combinatorial Operando Catalyst Research	\$272,149
PN06015/1944	Community-Based Biosignatures of Exposure and Functional Response in the Sediment-Water Interface of the Hyporheic Zone and Periphyton Community in River Systems	\$114,230
PN06018/1947	Cooperative Assembly of Active Nanomaterials and Devices	\$149,838
PN06019/1948	Data Intensive Machine Learning for Real-Time Decision Analysis	\$148,878
PN06023/1952	Development of a Scaleable Water Resources Management System	\$75,927

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Project ID	Project Name	FY Total
PN06029/1958	Effects of Soot Aerosol on Snow and Water Resource in the Western United States	\$18,924
PN06032/1961	Evaluating Multithreaded Architectures for Irregular Data Intensive Applications	\$179,651
PN06034/1963	Functional Genomic Analysis of the Regulation of Bone Cells by a Bioactive Lipid	\$343,512
PN06036/1965	Fundamental Investigations of Heterogeneous Catalysis Using Computational Methods	\$232,446
PN06042/1971	Identification of Proteomic Profiles and Biosignatures in Complex Microbial Systems Absent of Genomic Sequence Data	\$61,426
PN06044/1973	Information Physics Methods and Applications	\$227,014
PN06047/1976	Interrogation of Glucose Metabolism by Oral Biofilms Using Combined Nuclear Magnetic Resonance/Optical Spectroscopy and Stable Isotope Labeling	\$152,088
PN06052/1981	Multiscale Computational Model of the Heart to Predict Airborne Particulate Matter Cardiovascular Disease	\$79,865
PN06054/1983	Nanoscale Characterization of Nanomaterial-Cell Membrane Interactions	\$81,853
PN06055/1984	Nanostructured Catalyst Synthesis and Applications	\$322,060
PN06058/1987	Ni-Based Molecular Electrocatalysts for Hydrogen Production/Oxidation	\$216,623
PN06062/1991	Power Systems Computational Advancements	\$396,880
PN06063/1992	Preparation and Characterization of Peptide Arrays Using Soft Landing	\$125,647
PN06066/1995	Quantitative Characterization of Post-Translational Protein Modifications Using Mass Spectrometry	\$314,291
PN06068/1997	Regulation of Cell Surface Ligand Dynamics	\$344,017
PN06069/1998	Response of Radiation Detector Materials to Ions	\$120,161
PN06070/1999	Secretome Analysis of Nanomaterial Induced Biomarkers	\$19,992
PN06072/2001	Sensor Platforms for Biomarkers of Response to Biological Agents - Immuno-PCR Bead Assays for Detecting Early Biomarkers	\$51,220
PN06073/2002	Sensor Platforms for Biomarkers of Response to Biological Agents - Nanoparticle Immunoassays for Detecting Protein Biomarkers	\$65,188
PN06078/2007	Synthesis and Characterization of Thin Films for Rapidly Screening Detector Materials	\$314,342
PN06080/2009	The Tree-of-Life Chip for Examination of Ecosystem Structure and Function	\$188,706
PN06083/2012	Using Subtractive Hybridization to Identify Biosignatures of Perturbed Microbial Communities	\$154,473

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PNNL - Pacific Northwest National Lab

Project ID	Project Name	FY Total
PN07001/2015	A Data Virtualization Architecture	\$223,558
PN07002/2016	A Geometric Framework for Multimodal Analysis of Cardiac Tissue Using Magnetic Resonance Imaging, Histopathology, and Proteomics for the Identification of Biomarkers	\$69,955
PN07003/2017	A Multidisciplinary Approach to Engineer Xylose and Arabinose Utilization for Ethanol Production by <i>Saccharomyces cerevisiae</i>	\$109,917
PN07004/2018	Accelerated Fuel-Cladding Test Methods and Tools	\$254,343
PN07005/2019	Adaptive Composite Analysis for Complex Systems	\$132,953
PN07007/2021	Adaptive Workflow in Data Intensive Environments	\$205,910
PN07008/2022	Advanced Gas Separations Based on Highly Efficient Microchannel Component Technology	\$135,544
PN07010/2024	Analysis of Functional Diversity in Microbial Communities for Organic Carbon Transformations	\$204,916
PN07013/2027	Benchmark Modeling of the Microphysical Aspects of Cloud-Aerosol Interactions	\$35,848
PN07014/2028	Biosignature Discovery in Respiratory Exposure to Model Biological Agent Systems Using H-NMR	\$67,263
PN07015/2029	Biosignature Integration for Inference of Biomarkers from Complex Systems	\$227,902
PN07016/2030	Carbon Nanotube Materials for Preconcentration	\$125,033
PN07017/2031	Catalytic Chemistry of the Weak Links in Lignins and Lingintes	\$79,258
PN07018/2032	Cationic Ionic Hydrogenations: Developing Concepts and New Catalytic Processes that Substitute Inexpensive Metals for Precious Metals	\$239,494
PN07019/2033	Characterization of the Local Order of Organic Thin Film Material by Combined Atomic Force Microscopy and Optical Microscopy	\$110,462
PN07020/2034	Cloud Resolving Model with Size Resolved Microphysics for Aerosol and Cloud Research	\$204,040
PN07021/2035	Complex Adaptive Agent Resilient Cores	\$38,013
PN07022/2036	Complex Adaptive Sensor Systems	\$222,404
PN07023/2037	Counter-Current Solvent Extraction Behavior of Neptunium	\$242,333
PN07024/2038	Data Network and Policy Modeling: A Methodology for Modeling and Application of Network Policy	\$81,972
PN07025/2039	Deep Desulphurization of Hot-Coal Gas for Production of Liquid Fuels	\$124,909
PN07026/2040	Design, Synthesis and Testing of Novel High Temperature Sorbents for Removing Mercury Species from Coal to Liquids Process Streams	\$279,430

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Project ID	Project Name	FY Total
PN07027/2041	Develop an Expert Elicitation Process for Use in Evaluation of Proliferation Resistance of Nuclear Energy Systems	\$63,817
PN07028/2042	Developing a Knowledge-Centric "Simulation Backplane" for Multi-Physics Simulation with Nuclear Energy Applications	\$145,687
PN07029/2043	Development and Evaluation of a Benchmark Aerosol Chemistry, Dynamics, and Microphysics Model	\$95,130
PN07030/2044	Development of a Novel Cross-Linking Reagent for High-Throughput Global Analysis of Protein Interactions	\$109,567
PN07031/2045	Development of a UF6 Cylinder Integrated Portal Monitoring Capability	\$94,678
PN07032/2046	Development of Petascale Algorithms for Molecular Modeling	\$198,613
PN07033/2047	Direct Coal Liquefaction	\$150,838
PN07034/2048	Efficient and Practical Simulation of Transport and Dispersion of Contaminants from Within the Marine Environment	\$94,112
PN07035/2049	Electrochemical Separations for Enhanced Safeguards Analysis	\$138,062
PN07036/2050	Enhanced Detection of Peroxide Based Explosives	\$127,604
PN07037/2051	Enhanced Explosive Signature Capture via Selective Collection and Preconcentration Chemistries	\$92,276
PN07038/2052	Enhanced Isotope Ratio Measurement Capability	\$160,269
PN07039/2053	Fate and Transport of Titanium Dioxide Through Freshwater Ecosystems	\$59,114
PN07040/2054	Field-Deployable Nanoparticle Biosensor	\$119,549
PN07041/2055	Forming Prediction of Lightweight Alloys Using an Inverse Approach	\$79,899
PN07043/2057	Human Factors for Situational Awareness in Power Grid Operations	\$24,607
PN07044/2058	Image Processing Methods Applied to the Detection of Highly Concealed Explosives	\$116,586
PN07045/2059	Improved Selectivity for Explosives Detection by Ion Mobility Spectrometry	\$190,508
PN07046/2060	Information-Driven Discovery of Radiation Detection Materials	\$149,027
PN07047/2061	Integrated Assessment of the Origins of Scintillator Nonlinearity	\$199,762
PN07048/2062	Liquid Carbon Dioxide Coal Slurry Research	\$50,861
PN07049/2063	Liquid Fuel Synthesis Modeling	\$98,600
PN07050/2064	Mathematical/Computational Modeling of Biofilms	\$49,865
PN07051/2065	Measurement and Modeling of Slag Critical Viscosity, Optimization of Slag Chemistry, and Refractory Degradation in Coal Gasifiers	\$361,696
PN07052/2066	MeDICI - Middleware for Data Intensive Computing	\$314,631

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Project ID	Project Name	FY Total
PN07054/2068	Modeling Nonlinearity in Inorganic Scintillators and Semiconductors	\$176,987
PN07055/2069	Multiscale Computational Continuum Physics Solver	\$74,752
PN07056/2070	Nanoporous Metal Phosphates as Alternative Cathode Materials for Batteries	\$104,794
PN07058/2072	Novel Emitter Materials for Organic Thin Film Electroluminescence	\$99,848
PN07059/2073	Phase Contrast X-Ray Imaging For Enhanced Explosives Detection	\$99,757
PN07060/2074	Predictive Adaptive Classification Model for Analysis and Notification: Internal Threat (PACMAN-IT)	\$212,424
PN07061/2075	Protein and Peptide Markers of Infection	\$64,859
PN07062/2076	Reagent Selection Methodology for a Novel Explosives Detection Immunoassay Approach	\$125,199
PN07063/2077	Real-Time In Situ Millimeter Wave Sensors for Gasifiers	\$196,357
PN07064/2078	Sensitive and Specific Detection of Explosives Using a Multiplexed Two-Dimensional Field Asymmetric Waveform Ion Mobility Spectrometry/Ion Mobility Spectrometry System	\$114,812
PN07065/2079	Sensitive Detection of Biological Stress Response	\$154,787
PN07066/2080	Soil Desiccation for Deep Vadose Zone Remediation	\$56,424
PN07067/2081	Tactical Deployment and Management of Adaptive Agents	\$179,958
PN07068/2082	Tailoring of Fischer-Tropsch Synthesis Product Distribution Using Monolith Catalysts	\$134,622
PN07070/2084	The Aerosol Modeling Testbed	\$251,213
PN07072/2086	Ultratrace Uranium Isotopic Analysis without a Mass Spectrometer	\$150,927
PN07073/2087	Understanding Adaptation to Sudden Climate Change Impacts	\$69,849
PN08001/2088	A Recycleable Switchable Solvent System for CO2 Capture from Flue Gas Streams at Ambient Conditions	\$252,075
PN08002/2089	A Statistical Framework for Integrated Explosives Detection	\$41,760
PN08003/2090	Adaptation of Existing Probabilistic Risk Assessments to Support Reactor Aging Management	\$10,980
PN08004/2091	Advanced Materials for Capturing Lanthanides and Transition Metals from Fission Products	\$62,150
PN08005/2092	Application of Imperfection Modeling to Accelerated Fuel Clad Qualification and Characterization	\$62,987
PN08006/2093	Assessing the Impacts of Model Resolution at the Mesoscale and Cloud Resolving Scale on Climate Simulations in the Tropics	\$28,646

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Project ID	Project Name	FY Total
PN08007/2094	Banded Multiplexed Detection of Biothreats Using Superparamagnetic Nanoparticles	\$144,095
PN08008/2095	Biogeochemical Perturbation Methods for Immobilization of Deep Vadose Zone Contamination Using Reactive Gases	\$48,652
PN08009/2096	Biotemplated Synthesis of Encoded Bimetallic Nanoparticles	\$150,298
PN08010/2097	Carbonate Sorbents and Enzymatic Catalysts for Carbon Dioxide Capture	\$201,236
PN08011/2098	Characterization Model for Defense Adaptability	\$110,884
PN08012/2099	Circular or Full Polarimetric Holographic Radar Imaging for Tunnel and Explosives Detection	\$186,906
PN08013/2100	CO2 Capture and Concentration Using Electrochemically Switchable Carriers	\$103,561
PN08014/2101	Computational Capabilities for Storage, Management, and Utilization of Large Data Volumes	\$199,974
PN08015/2102	Correlation Layers for Information Query and Exploration (CLIQUE)	\$158,514
PN08016/2103	Delivery of Calcium Polysulfide to Hanford Deep Vadose Zone for Cr(VI)/Tc-99 Remediation	\$75,119
PN08017/2104	Developing a Generic Numerical Module for Simulating the Transport of Gas with Multiple Components for the Design and Safe Implementation of In Situ Gaseous Reduction Remediation	\$59,400
PN08018/2105	Development and Understanding of Nanostructured Materials for Advanced Energy Storage	\$926,587
PN08019/2106	Development of a Ballistic Electron Microfabricated Cathode	\$109,818
PN08020/2107	Development of a Computational Fluid Dynamics Capability as a Tool for Exploring Atmospheric Processes	\$60,199
PN08021/2108	Development of a Computational Model for the Eelgrass (Zostera Marina L.) and its Demonstration in Puget Sound for Studying the Effects of Climate and Human Driven Stressors on Eelgrass Distribution a	\$39,921
PN08022/2109	Development of Core Informatics Analysis Tools for Confident Protein Identification and Quantitation	\$420,070
PN08023/2110	Development of Gaming Technology for Cognitive Enhancement in Predictive Analytics	\$218,950
PN08024/2111	Development of Gaming Technology for Evaluation of Predictive and Adaptive Performance of Cyber Security Defense Systems	\$109,432
PN08025/2112	Development of O-18 Isotope Ratio Measurements of Uranium Oxides and Surface Metal Oxides for Forensic Analysis	\$120,802
PN08026/2113	Dissolution of Actinides under Oxidizing Conditions for Nuclear Energy Applications	\$156,574

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Project ID	Project Name	FY Total
PN08027/2114	Dynamic Scenarios for Organizations in Infrastructures	\$181,560
PN08028/2115	Electrolyte Development for Next Generation of Lithium Ion Batteries	\$50,788
PN08030/2117	Fine-Scale Physical Structure and Microbial Composition of Soil Aggregates Related to Carbon Sequestration	\$99,729
PN08031/2118	First Operation of a Novel, High-Mass Detector as a Weakly Interacting Massive Particle (WIMP) Dark Matter Detector	\$119,297
PN08032/2119	Fundamental Understanding of Carbohydrate Catalysis in Ionic Liquids	\$251,770
PN08033/2120	Guided Discovery Demonstration Project	\$230,383
PN08034/2121	High Performance Data Analysis Pipeline for Online Smart Mass Spectrometry	\$180,126
PN08035/2122	Hybrid Computing Solutions Applied to feature Extraction, Characterization, Classification, and Clustering	\$217,942
PN08036/2123	Instrument Control for the "Next Generation" Proteomic Measurement Capabilities	\$254,890
PN08037/2124	Intelligent Compression and Data Organization for Multidimensional Data Volumes	\$179,480
PN08038/2125	Interactive Visual Content Analysis of Real-Time Data Streams	\$181,602
PN08039/2126	Investigation of Exfoliated Graphite Oxide as a Potential Supercapacitor Electrode Material	\$79,775
PN08040/2127	Ion Beam-Nanoparticle Interactions for Radiation Detection	\$104,750
PN08041/2128	Isoform-Specific Quantitative Proteomics Applying N-terminal Enrichment and Informatics Deconvolution	\$62,393
PN08042/2129	Iterative Modeling of Host-Pathogen Interactions	\$254,900
PN08043/2130	Knowledge Encapsulation Framework	\$186,573
PN08044/2131	Laser Frequency Control for Trace Actinide Isotopic Analysis	\$34,693
PN08045/2132	Leak Rate Measurements for Prototypic Pressurized Water Reactor Primary Water Stress Corrosion Cracks	\$9,320
PN08046/2133	Machine Learning String Tools for Operational and Network Security	\$148,101
PN08047/2134	Managing Complexity of High-Volume Predictive and Adaptive Network Operations	\$113,865
PN08048/2135	Metal Beta-Diketonate Polymers for Selective Concentration of Explosives	\$138,860
PN08049/2136	Micro-Structured and Membrane Reactors for Intensification of Multiphase Biomass Conversion Process	\$101,431
PN08050/2137	Modeling Nanoparticle-Cell Interactions	\$303,596

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PNNL - Pacific Northwest National Lab

Project ID	Project Name	FY Total
PN08051/2138	Modeling of Microbial Communities in Soil Aggregates	\$154,594
PN08052/2139	Modular Network Modeling of Inflammatory Pathways	\$209,731
PN08053/2140	Module-Based Analysis of Autocrine and Paracrine Cell Signaling	\$251,746
PN08054/2141	Multicomponent Assembly to Achieve Charge Separation and Transport for Energy Conversion	\$292,370
PN08055/2142	Nano and Micro-Engineered Solid Adsorbent for Rapid CO2 Capture and Regeneration	\$174,877
PN08056/2143	Nano-Crystalline Cellulose	\$90,469
PN08057/2144	Nanomaterial Fate, Transport and Transformation in a Freshwater Mesocosm	\$96,907
PN08058/2145	Nano-Ribbon Membranes for Viable CO2 Separation	\$85,443
PN08059/2146	Nanoscale Tantalum Oxide Electrocatalysts for Polymer Electrolyte Membrane Fuel Cells	\$88,106
PN08060/2147	n-Doped Electron Transporting System For Top-Emitting White Organic Light-Emitting Devices Applications	\$101,370
PN08061/2148	Nuclear Fuel Cycle Safeguards	\$368,393
PN08062/2149	Optimizing Generation Portfolios and Dispatches with Consideration of Environmental Constraints in View of Significant Penetration of Intermittent Renewable Energy Resources	\$73,468
PN08063/2150	PCR Arrays For Quantitative Evaluation of Microbial Communities	\$97,365
PN08064/2151	Predicting the Impact of Climate Change on U.S. Power Grids and Its Wider Implications on National Security	\$191,649
PN08065/2152	Process Modeling of Chemically Complex Solid-Liquid Suspensions	\$229,861
PN08066/2153	Prognostics and Predictive Risk Assessment in Computational Infrastructures	\$123,682
PN08067/2154	Proteomic Methods and Quantitative Structure Activity Relationship Models to Predict Nanoparticle Surface Chemistry Interactions	\$49,537
PN08068/2155	Prussian Blue Analogues and Interpenetrated Metal-Organic Frameworks for CO2 Capture	\$77,711
PN08069/2156	Real-Time Electrical Resistivity Tomography System for High Resolution Environmental Characterization	\$44,970
PN08070/2157	Scientific Metadata Services (SMS) Architecture	\$174,110
PN08071/2158	Self-Correcting Controls for Heating, Ventilation, and Air Conditioning Systems	\$93,554
PN08072/2159	Simultaneous Charge Transport in Laterally Confined One-Dimensional Systems	\$108,184

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PNNL - Pacific Northwest National Lab

Project ID	Project Name	FY Total
PN08073/2160	Simultaneous Measurement of Fish and Flow Using Underwater Sonar	\$31,943
PN08074/2161	Spent Fuel Shipping and Storage Cask Monitor	\$72,721
PN08075/2162	Standoff Concealed-Device Detection and Signature Analysis using Non-Imaging Sub-Millimeter Wave Radar	\$99,620
PN08076/2163	Standoff Infrared Detection of Explosives	\$151,968
PN08077/2164	Theoretical Modeling and Ex-Reactor Testing of Fuel Properties to Accelerate Fuel Qualification	\$136,603
PN08078/2165	Thermodynamic Model to Predict Thermal Behavior of Lithium Ion Batteries	\$125,043
PN08079/2166	Ultra-Pure Nuclear Physics Materials - Chemical Production of Copper	\$21,512
PN08080/2167	Understanding Ice Formation in the Atmosphere	\$500,365
PN08081/2168	Vulnerability of Food Security and Energy Infrastructures to Climate Change and Terrorism	\$190,729
Total # of Projects for PNNL:	188	Total Cost for PNNL: \$27,358,285

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PRINCE - Princeton Plasma Physics Lab

Project ID	Project Name	FY Total
PPPL-004	Laboratory Study of Magnetorotational Instability in a Helicon Plasma	\$133,889
PPPL-005	A High Power Density Electron Beam Facility	\$128,058
PPPL-006	Engineering Assessment of a National High-power advanced Torus Experiment (NHTX)	\$132,324
PPPL-007	Plasma Cathode with Secondary Emission	\$139,955
PPPL-009	Free-Boundary Equilibrium Module Development	\$44,530
PPPL-010	Study of the Evolution of Magnetic Topology and Associated Global MHD Phenomena	\$87,263
PPPL-011	Multi-Tasking Remote Autonomous Vehicle Sensor System	\$54,150
PPPL-012	Creation of a Plasma Source for Diamond Thin Film Deposition	\$32,606
PPPL-013	Modeling of ULF Waves in Mercury's Magnetosphere	\$79,165
Total # of Projects for PRINCE:	9	Total Cost for PRINCE: \$831,940

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PTX - Pantex Plant

Project ID	Project Name	FY Total
PX05006	Measurement of Physical Constants for Various Crystalline High Explosives	\$76,417
PX06004	Explosive Component Electrostatic Discharge Response Model	\$79,323
PX06005	Spectroscopic and Infrared Imaging Studies of Pressing Effects on Explosives	\$-351
PX07001	High Explosives Operations Safety Controls Validation	\$423,182
PX07003	Lightning and Power Distribution System Fault Modeling	\$139,365
PX07007	Reactions of Hydrofluoroethers	\$262,886
PX07009	Seismic Qualification Analytical Solutions	\$23,518
PX08008	Benchtop High Explosives Testing	\$40,611
PX08010	Continuation of Microwave Technology Testing	\$79,069
PX08011	Determination of Hansen Solubility Parameters for Cleaning Applications	\$38,790
Total # of Projects for PTX:	10	Total Cost for PTX: \$1,162,810

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
102600	Nanoengineering for Solid State Lighting	\$594,316
102613	Phase Imprint Lithography for Large Area 3D Nanostructures	\$553,943
102615	Mid-Infrared Quantum Dot Emitters Utilizing Planar Photonic Crystal Technology	\$574,093
102660	"Bottom-up" Meets "Top-down:" Self-assembly to Direct Manipulation of Nanostructures on Length Scales from Atoms to Microns	\$450,455
102737	Creation of Water-Treatment Membrane Technologies with Reduced Biofouling	\$588,446
105189	Precise Distributed Control and State/Parameter Estimation for Multi-body Satellites and Satellite Formations	\$0
105190	Modeling and Design of Microstructures with Tailored Adhesive Properties	\$4,456
105191	Fourier Analysis and Synthesis Tomography	\$30,444
105193	Neural Correlates of Attention and Intention in Decision-Making of Macaques and Humans: Selective Lesioning of Posterior Parietal Areas during Electrophysiology and fMRI	\$51,966
105213	Application of Advanced Laser Diagnostics to Hypersonic Wind Tunnels and Combustion Systems	\$23,867
105672	On the Role of Numerical Error in Turbulence Simulations	\$54,210
105722	Discovery, Integration, and Interrogation of Biotic/Abiotic Materials and Systems	\$538,486
105725	High-temperature mid-IR Focal Plane Arrays	\$447,304
105726	Radiation Hardened Components for Space Qualified Point-of-Load Power Conversion	\$604,277
105727	Modeling and Design of High Speed Networks for Satellite Applications	\$386,940
105728	Examination of the Optical Mechanical Interface for Advanced Systems to Improve Performance	\$76,225
105729	Thermal Microphotonic Focal Plane Array (TM-FPA) for High Sensitivity Room Temperature Infrared Imaging	\$406,157
105730	Tuned Micro-Cavity Magnetometer / Quantum Computation Device	\$302,611
105731	Application Specific Compression	\$351,593
105732	MESA ASML Scanner Based Reticle Field-Stitch Capability Enabling Wafer Scale Integration with Direct Impact on Mega-Pixel Focal Plane Array Synthesis	\$377,855
105733	Direct Write Nanoscale Methods for Chalcogenide Memory	\$192,261
105734	A Novel Method to Construct Software	\$224,122

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
105736	Ultra-Thin Packaging of Electronic Assemblies	\$307,298
105737	Graph-Based Informatics for Nonproliferation and Counterterrorism	\$296,633
105738	Advanced Line of Sight Stabilization Experiment	\$297,931
105739	Scannerless Range Imaging for Autonomous Rendezvous and Capture	\$298,743
105742	Managing Thermal Emission: Subwavelength Diffractive Optics Technology in Support of SOF	\$434,845
105743	Enhanced Inverse SAR	\$268,170
105744	Heterogeneous Microsystem Integration as Applied to the Practicality of a Small Caliber Guided Bullet	\$511,127
105745	Detecting Ideologically-based Global Terrorist Networks	\$393,887
105746	Autonomous Intelligent Assembly Systems	\$392,951
105747	MEMS Sensors and Telemetry For Prognostic Health Management	\$402,831
105748	Building a Live/Virtual/Constructive Experimental Testbed	\$367,469
105749	Plasmonic Antireflection Coatings (PARC)	\$416,726
105750	Data Fusion and Communications for Global Strike Weapon-Deployed Sensor Systems	\$778,125
105751	Missile Defense Discrimination	\$234,130
105754	Electromagnetic Gun Simulation Tool	\$285,918
105756	Reverse Engineering Countermeasures for Hardware and Software	\$340,903
105773	Software and Information Systems Analysis Techniques	\$363,270
105794	Cyber TTL: Tagging, Tracking, and Locating Network Assets	\$261,215
105799	Lightweight Storage and Overlay Networks for Fault Tolerance	\$314,860
105800	Microstructure-based Approach for Predicting Crack Initiation and Early Growth in Metals	\$582,252
105801	Hybrid Plasma Modeling	\$275,495
105804	Advanced Diagnostics for Full-Scale Fire Experiments: Closure of the Radiation Source Term and Spectral Fire Signatures	\$639,354
105805	Nanomechanics of Films on Compliant Substrates to Enable New Flexible MEMS and NEMS Devices	\$534,291
105806	Crossing the Mesoscale No-Man's Land: Massively Parallel Kinetic Monte Carlo	\$438,068
105808	Predictive Modeling of Microenergetics	\$998,396

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
105809	Building More Powerful Less Expensive Supercomputers Using Processing-In-Memory (PIM)	\$380,299
105810	Reduced Order Modeling of Fluid-Structure Interaction	\$368,653
105811	Experimental Assessment and Theoretical Stability Analysis of Unvalidated Assumptions in Generalized Plasticity Theory	\$154,860
105812	Highly Scalable Linear Solvers for Large Science Simulations on Thousands of Processors	\$324,413
105813	Massive Multithreading Applied to National Infrastructure and Informatics	\$380,155
105814	Practical Reliability and Uncertainty Quantification for Complex Hierarchical Systems	\$440,841
105815	HPC Application Performance Analysis and Prediction	\$427,063
105816	Model Reduction of Large Dynamic Systems with Localized Nonlinearities	\$421,228
105818	Development of Advanced Continuum Models that Incorporate Nanomechanical Deformation into Engineering Analysis	\$289,815
105821	Availability Analysis of Fuel Conversion Technologies	\$230,087
105824	Geophysical Remote Sensing of Water Reservoirs Suitable for Desalination	\$468,481
105825	Advanced Fuel Chemistry for Advanced Engines	\$369,036
105829	Supercritical CO2 Brayton Cycle Test-Loop Development, Controls, Testing, and Model Validation	\$544,053
105833	Foundational Development of an Advanced Burner Reactor Integrated Safety Code	\$589,391
105858	Biofilm Biogenesis and Control in Membrane-based Water Treatment Systems	\$292,708
105863	Nuclear Facility Counterproliferation	\$449,710
105864	Tracking Nuclear Materials Processing: Metabonomics of Indigenous Species	\$306,862
105865	Innovative Control of a Flexible, Adaptive Energy Grid	\$431,551
105866	Direct Approaches for Recycling Carbon Dioxide into Synthetic Fuel	\$651,934
105867	Decision Support for Integrated Water-Energy Planning	\$420,901
105868	Creation of a Lab-Wide Total Risk Analysis Capability	\$713,306
105869	Border Tunnel Detection	\$527,021
105870	Enabling All-Threat Analysis Through Intelligent Filtering of Network Traffic	\$476,578
105871	New Methods for Development of Broad Spectrum Drugs Against Biowarfare Agents	\$552,040
105872	Enhanced Simulation for Homeland Security Training	\$636,090

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
105873	Research on Micro-sized Acoustic Bandgap Structures	\$491,470
105874	Intelligent Front-end Sample Preparation Tool using Acoustic Streaming	\$469,654
105875	Development of a Multivariate Electrochemical Tool (MET)	\$303,024
105876	RF/Microwave Properties of Nanotubes and Nanowires	\$405,831
105877	Novel Diagnostic for Advanced Measurements of Semiconductor Devices Exposed to Adverse Environments	\$282,209
105878	Irradiation for the Novel Radiolytic Formation of Superalloy Nanoparticles	\$450,461
105879	MicroKelvin Molecule Production	\$396,089
105893	Compositional Ordering and Stability in Nanostructured, Bulk Thermoelectric Alloys	\$499,122
105899	Infrared to Visible Photon Up-conversion using a Compact Semiconductor Device	\$354,949
105906	Phonon Engineering for Nanostructures	\$609,040
105914	The Many Mechanisms for Strain Relaxation in III-Nitride Heterostructures: How, When and Why?	\$409,820
105917	Enhanced Spontaneous Emission Rates in Visible III-Nitride LEDs Using 3D Photonic Crystal Cavities	\$600,757
105922	Advanced Optical Measurements and Novel Microsystems for Characterizing Photophysical Properties of Single Nanoparticles	\$392,067
105928	Controlling the Nanoscale Chemistry of Carbon on Surfaces	\$300,142
105930	Theory and Exploration of Quantum-dot Optical Nonlinearities and Coherences	\$152,149
105931	Science at the Interface: Grain Boundaries in Nanocrystalline Metals	\$517,387
105932	Pumping Up CO2 and Its Conversion into Synthetic Fuels and Other Useful Molecules	\$376,501
105933	Nanoengineering of Active Interfaces for Organic-Inorganic Optoelectronics	\$589,900
105935	The Physics of 1D and 2D Electron Gases in III-Nitride Heterostructure Nanowires	\$450,837
105936	Neural Assembly Models Derived through Nano-Scale Measurements	\$637,703
105937	Improving Human Effectiveness for Extreme Scale Problem Solving	\$27,195
105938	Modeling Aspects of Human Memory and Reasoning for Scientific Study	\$341,289
105939	Psychologically Plausible Learning Mechanisms for Sandia's Cognitive Framework	\$480,213

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
105940	Resolving Dynamics of Cell Signaling via Real-Time Imaging of the Immunological Synapse	\$442,199
105941	Verification and Validation R&D for Computational Cognitive and Social Models	\$439,808
105942	In Vivo Collection of Rare Proteins Using Kinesin-based "Nano-harvesters"	\$409,556
105943	Microalgal Biodiesel, Feedstock Improvement by Metabolic Engineering	\$490,318
105944	Synthetic Biology of Novel Thermophilic Bacteria For Enhanced Production Of Ethanol From 5-Carbon Sugars	\$462,172
105946	Efficient Breakdown of Lignocellulose Using Mixed-microbe Population for Bioethanol Production	\$495,629
105948	Nanolaminate Thin Film Heat Sources for Advanced Weapon Components	\$484,889
105950	Multifunctional and Hybrid Energetic Components	\$462,101
105951	Active Polymer Composites for Detecting Abnormal Thermal and Optical Environments	\$370,675
105953	Optical Gaseous Atmosphere Sensing and Monitoring Using Surface Plasmon Resonance Spectroscopy and Custom Optic Coatings	\$431,776
105954	Horizon: Next Generation Architecture for a Small Dynamically Reconfigurable Weapon System	\$379,593
105964	Multilayer Coextrusion Techniques for Developing High Energy Density Organic Devices	\$365,303
105966	A Radiation Microscope for SEE Testing Using >10 GeV Ions	\$350,888
105968	Microfabricated Wire Arrays for Z-Pinch	\$256,412
105969	Electromagnetic Properties of Plumes and Plasma Jets for High-Power Microwave Applications	\$484,719
105970	High Power Density X-ray Sources	\$439,847
105971	Automated Monte Carlo Biasing for Photon-Generated Electrons Near Surfaces	\$399,906
105972	Ferroelectric Opening Switches for Large-Scale Pulsed Power Drivers	\$224,867
105975	Equation of State and Transport Property Measurements of Warm Dense Matter	\$295,153
105976	Low Impedance Z-Pinch Drivers Without Post-Hole Convolute Current Adders	\$327,640
105979	Expansion of QMD Materials Modeling to Surface Phenomena of Importance to Electrical Breakdown in Pulsed Power Systems	\$257,994
105985	Evaluation of New Testbeds for Hostile Environment Testing of Micromachines, Optoelectronics, and Electronics	\$101,530

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Project ID	Project Name	FY Total
105987	Understanding Surface Breakdown in Electronegative Gases	\$444,430
106397	Multi-Mode Energy Scavenging from the Environment	\$52,825
106401	Passive and Active Electromagnetic Frequency Selective Surfaces for High-Power Beam Applications	\$244,653
106403	Effect of Pressure and Particle Size on Microstructure and Properties of Vacuum-Plasma-Sprayed Ytria-Stabilized-Zirconia Solid Oxide Fuel Cell Electrolytes	\$26,999
106405	Active Control of Periodic Disturbances	\$29,360
106408	Improving Robot Navigation through Self-Supervised Online Learning	\$55,369
107009	Volumetric Plasma Source Development and Characterization	\$149,992
107441	Creation of a First Principles Simulation of Weapons Generated Electromagnetic Pulse	\$415,935
110404	Network Design Optimization of Fuel Cell Systems and Distributed Energy Devices	\$249,989
110405	Microrheology of Polymeric Materials at High Strain Rates	\$26,375
110406	Diffusion-Based Sensing of Membrane Proteins in Solid Support Platforms	\$31,994
110407	Advanced Materials for Water Treatment Membranes: Enhanced Rejection Performance and Surface Properties	\$29,999
113483	Interfacial Property Control of Elastomeric Nanocomposites	\$489,637
113484	Improving Electronic Structure Calculations to Predict Nano-optoelectronics and Nanocatalyst Functions	\$351,641
113485	Developing a Thermal Microscopy Platform for In-Situ Thermal/Thermoelectric Structure-Property Studies of Individual Nanotubes and Nanowires	\$523,124
113486	Fundamentals of Synthetic Conversion of CO2 to Simple Hydrocarbon Fuels	\$304,332
113487	Electrostatic Microvalves Utilizing Conductive Nanoparticles for Improved Speed, Lower Power, and Higher Force Actuation	\$323,969
113488	Nanoengineering by Optically Directed Self Assembly	\$501,578
113489	Optimized Nanoporous Materials	\$348,131
113490	CO2 Reduction Using Biomimetic Photocatalytic Nanodevices	\$416,033
113491	Stress-Induced Chemical Detection Using Flexible Coordination Polymers	\$390,693
114976	Discontinuous Galerkin Methods for Generalized Continuum Models for Inelasticity	\$52,750
117739	Overcoming Jitter Effects for Remote Staring Sensors	\$293,174

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Project ID	Project Name	FY Total
117742	Precision Nano-Bumping Technology for Large Format Focal Plane Arrays	\$410,580
117743	Advanced Data Processing Module for Future Satellite Projects	\$354,235
117745	Miniaturized 3-D Magnetic Phasors Fed by Micro-Coax	\$179,710
117746	Innovative Solutions for Terrestrial Based Tagging, Tracking, and Locating and Clandestine Data Exfiltration	\$358,000
117747	Automatic Target Recognition for High Range Resolution Radar	\$139,746
117748	Adaptive, Lightweight, Gel-coated Fabric for Protection from Low Velocity Fragments and Projectiles	\$322,956
117749	Oxygen Insensitive Anode Chemistry to Enable the Spray Paintable Battery	\$520,649
117752	Toward Developing Real-time Individualized Training Vectors for Experiential Learning	\$300,229
117755	Micro Mobility / Propulsion	\$344,660
117758	Automated Entity Relationship Extraction	\$212,260
117759	Extremely Thin Chemical Sensor Arrays Using Nanohole Arrays	\$304,723
117761	Flexible Thin Film Battery Development	\$277,856
117762	Integrated Point-of-use Two Dimensional Fuel Cell	\$195,610
117763	Assessment of Vista Security Technologies	\$455,082
117764	Understanding and Developing Countermeasures for Botnets	\$217,386
117765	Robust, Scalable Information Operations: A Complex Networks Approach	\$115,140
117770	Composite Thermal Protection Systems Incorporating Energy Absorption With Oxidation Resistance	\$352,375
117773	Investigation of Technologies for Hypersonic Payload Release	\$236,065
117774	The SEPIA Hybrid Network Analysis Environment	\$356,622
117775	High-Speed Spectral Sensor	\$251,148
117776	Electromagnetic Launch Science and Technology	\$770,818
117777	Creating a Model-Based Secure Digital Radio Design Methodology	\$396,179
117778	LEEM Examinations	\$200,914
117779	Ultrathin Optics for Low-Profile, Innocuous Imager	\$155,314
117780	Oxygen Sensor and Exothermic Indicator	\$151,522
117781	Investigating the Point Seismic Array for Superior Seismic Monitoring	\$161,974
117782	Leveraging Multi-way Linkages on Heterogeneous Data	\$451,159

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Project ID	Project Name	FY Total
117783	Peridynamics as a Rigorous Coarse-Graining of Atomistics for Multiscale Materials Design	\$598,166
117784	Predicting Fracture in Brittle Micro-scale Structures	\$492,554
117785	A Light Weight Operating System for Multicore Capability Class Supercomputers	\$345,861
117786	Enhanced Molecular Dynamics for Simulating Thermal and Charge Transport Phenomena in Metals and Semiconductors	\$389,072
117787	Solution Methods for Very Highly Integrated Circuits	\$312,400
117788	Scalable Solutions for Processing and Searching Very Large Document Collections	\$342,848
117789	Scaling I/O for High Performance Commodity Clusters	\$426,970
117790	Surface Rheology and Interface Stability	\$335,299
117791	Phenomenological Basis for Safety Assessment of Nuclear Process Facilities	\$199,535
117792	Development of a New Generation of Waste Form for Entrapment and Immobilization of Highly Volatile and Soluble Radionuclides	\$361,189
117793	Metal Fires and Their Implications for Advanced Reactors	\$472,229
117794	Design and Evaluation of Border Security Systems	\$474,874
117795	Computational and Experimental Platform for Understanding and Optimizing Water Flux and Salt Rejection in Nanoporous Membranes	\$482,362
117796	Development of Efficient, Integrated Cellulosic Biorefineries	\$600,899
117798	Intelligent Power Controllers for Self-Organizing Microgrids	\$349,222
117801	Spectroscopic Radiation Detectors for Extreme Environments	\$369,223
117805	Biosafety Risk Assessment Methodology (Biosafety-RAM)	\$150,666
117806	Investigation of Ultra-low-power PMT-based Radiation Detectors	\$147,827
117807	Anticipating The Unintended Consequences Of Security Dynamics	\$353,509
117808	Intrinsic Security for Insider Threats	\$98,130
117810	Novel Instrumentation for Selective Photo-Ionization and Trapping of Fine Particles	\$377,969
117811	Microbial Agent Detection using Near-IR Electrophoretic and Spectral Signatures for Rapid Identification in Detect-to-Warn Applications	\$393,288
117812	Antibacterial Polymer Coatings	\$306,466
117813	High Volume Preconcentrator Coatings for High Vapor Pressure Compounds	\$384,706
117814	Two-pulse Rapid Remote Surface Contamination Measurement	\$366,042

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
117816	Automatic Recognition of Malicious Intent (ARMI)	\$200,249
117817	Risk-based Decision Making for Staggered Terrorist Attacks - Situational Awareness, Resource Markets and Systemic Risk Reduction Under "Reload" Scenarios	\$249,233
117818	Active Coded-Aperture Neutron Imaging	\$502,570
117819	Injection-Locked Composite Lasers for mm-Wave Modulation	\$415,770
117820	Nanopatterned Ferroelectrics for Ultrahigh Density Rad-Hard Nonvolatile Memories	\$409,136
117822	Integrated Optical Phase Locked Loop (IO-PLL) for Attosecond Timing in Microwave Oscillators	\$509,525
117825	Four-Wave Mixing for Phase-Matching-Free Nonlinear Optics in Quantum Cascade Structures	\$336,120
117827	A Revolution in Micropower: The Catalytic Nanodiode	\$462,219
117829	Efficient Multi-exciton Emission from Quantum Dots	\$608,648
117830	Programmed Assembly of Nanoscale Three-Dimensional Networks of Inorganic Materials	\$480,683
117832	Templated Synthesis of Nanomaterials for Ultracapacitors	\$523,235
117833	Anomalous Suppression of Fatigue and Wear through Stable Nanodomains	\$530,995
117834	Impact of Defects on the Electrical Transport, Optical Properties and Failure Mechanisms of GaN Nanowires	\$633,932
117835	Energy Conversion using Chromophore-Functionalized Carbon Nanotubes	\$349,014
117837	Studies of the Viscoelastic Properties of Water Confined Between Surfaces of Specified Chemical Nature	\$423,679
117838	Biomolecular Transport and Separation in Nanotubular Networks	\$544,845
117839	Initiation of the TLR4 Signal Transduction Network - Deeper Understanding for Better Therapeutics	\$527,031
117840	"Trojan Horse" Strategy for Deconstruction of Biomass for Biofuels Production	\$402,050
117841	Enhanced Performance of Engineered Neural Networks using Nanostructured Probes and Predictive Computational Modeling	\$487,419
117842	Atomic Magnetometer for Human Magnetoencephalography	\$390,321
117843	Determination and Optimization of Spatial Samples for Distributed Measurements	\$132,974
117844	Intrinsically Secure Communications through Adaptive Beamforming	\$302,590

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
117845	Advanced Cathode and Electrolyte for Thermal Batteries	\$449,377
117846	MEMS-enabled Integrated Optical Circuits for Nuclear Weapons Applications	\$393,193
117847	3D Integration Technology for Highly Secure, Mixed Signal, Reconfigurable Systems	\$555,044
117849	Creating a Smart Fast-Neutron Calibration Source	\$163,506
117851	Microresonators for Advanced RF Systems	\$376,558
117852	Liquid Jet Electro-Discharge Machining	\$68,635
117853	Novel Foam Encapsulation Materials and Processes	\$468,825
117856	Measuring High-Pressure Strength on Pulsed Power Machines	\$467,662
117857	Efficient Massively Parallel Discrete-Ordinates Methods for Radiation Transport	\$89,908
117859	Advanced Magnetized HED Physics Modeling	\$365,679
117860	Demonstration of Fast Pulsed Neutron Capability for Device and Board Testing	\$394,392
117862	Evaluate Radial Wire Arrays for ICF and RES	\$439,837
117863	Scaling of X-pinch X-ray Sources from 1 MA to 6 MA	\$438,572
117864	Phase Conjugate Interferometer for Time-Resolved Measurement of Material Morphology	\$168,082
117865	Novel Collaboration and Situational Awareness Environment for Leaders and their Support Staff via Self Assembling Software	\$140,269
117866	Physics of Intense, High Energy Radiation Effects	\$304,521
117992	High-Throughput Discovery and Validation of Biomarkers for Biodefense	\$713,829
118452	Low-Altitude Airbursts and the Impact Threat	\$35,329
118735	Low Dislocation GaN via Defect-Filtering, Self-Assembled SiO ₂ -Sphere Layers	\$224,941
118841	Aligned Mesoporous Architectures and Devices	\$54,942
118842	Rheological Properties of Nanocomposites	\$60,032
118843	A New Chamber Design for Aerosol Evolution Studies in the Ambient Environment	\$23,821
119351	Network Discovery, Characterization and Prediction	\$3,328,275
119352	Quantum Information Science and Technology	\$3,667,172
119353	Global TTL	\$273,956

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
119355	Solving Unique Challenges Associated with Packaging and Materials Interactions for Things Thin	\$150,509
119386	Fundamental Materials Issues for Thermochemical H2O and CO2 Splitting	\$350,142
119632	Improved Numerical Methods for Modeling River-Aquifer Interaction	\$28,956
119634	Spatial Optimization for Regional Stormwater Infrastructure: Balancing Water Quality, Supply Augmentation and Ecosystem Function	\$29,916
119638	Using Reconfigurable Functional Units in Conventional Microprocessors	\$26,375
119639	Heat Conduction and Particle Motion in Stationary Nanofluids	\$53,218
119640	Nanotransport and Control of Molecules Through Molecular Gates	\$31,516
119644	Solar Hydrogen Generation with Porous Semiconductor Electrodes	\$52,750
119645	Signature Molecular Descriptor: Advanced Applications	\$52,750
119647	Physiological Models and Inference Based on Optical Imaging	\$52,750
119650	Richtmyer-Meshkov Instability of a Membraneless Gas Interface	\$26,375
120207	Passive High-Flux Thermal Management of Electrochemical Systems with in situ Microchannel Phase Change	\$29,945
120208	Cosmic-ray Hydrometrology for Land Surface Studies	\$198,320
120209	Multiscale Schemes for the Predictive Description and Virtual Engineering of Materials	\$245,457
120254	Cross-layer Design for Secure Communications in MANETs	\$29,114
120255	Capture and Utilization of Context in Language Comprehension and Memory	\$30,890
120460	Mobile Agent Systems for Distributed Embedded System Reasoning and Complex Warfare Simulation	\$28,693
120479	Advanced I/O for Large-Scale Scientific Applications	\$26,375
120711	Nanolithography by Combined Self-Assembly and Directed-Assembly	\$305,928
120712	Capturing Carbon Dioxide via Reactions in Nanopores	\$125,227
120713	Doppler Electron Velocimeter - Dynamics at the Nanoscale	\$255,782
122249	Tritium Storage Material	\$509,446
122250	Superlattice Formation in Bulk Thermoelectric Alloys	\$508,725
122359	Millimeter- and Submillimeter-wave Nanoscience	\$101,120
124007	Fundamental Studies of Electrokinetic Phenomena in Polymer Microsystems	\$55,759
124009	Novel Methods for Detecting and Defending Against Advanced Malware	\$251,104

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Project ID	Project Name	FY Total
124643	The Development of a Mechanical Weaklink Prototype for NW Systems	\$376,803
124644	High Voltage Radiation Hard Pnp Heterojunction Bipolar Transistors (HBTs)	\$500,565
124647	Novel Ultrafine Grain Processing and Properties of Soft Magnetic Materials	\$159,579
125276	Atomic Shadow Microscopy	\$102,933
125854	Development of Novel Porous Polymers for National Security Applications	\$101,011
125855	Investigations of Graphene Interfacial and Nucleation Mechanisms Relevant for Nanoelectronics	\$234,219
125856	Direct Patterning and Assembly of Graphene Films for Nanoelectronic Applications	\$59,549
125857	High Efficiency Infrared Detector Coupling Carbon Nanotubes with Photonic Crystals	\$49,835
125858	Neutral Atom Microtraps	\$43,796
125859	Medically Relevant ElectroNeedle? Technology Development	\$100,877
125860	Viral RNA Testing on the Bead-Based CBNE Detection Microsystem	\$71,382
125861	Fundamental Studies in the Dynamic Response of Nanocrystalline Cellulose to Chemical Hydrolysis	\$52,090
125862	Reprocessing Plant Simulation Model	\$84,040
125863	Advanced Electrolyzer Concepts for Hydrogen Production Through the Hybrid Sulfur Process	\$98,191
125864	Capabilities for Uncertainty in Predictive Science	\$157,751
125865	Mathematical Approaches for Complexity/Predictivity Trade-Offs in Complex System Models	\$200,054
125866	Methods for Testing Structural Materials for Use in Fast Neutron Environments	\$103,071
125867	Defining Problems and Solution Approaches within CASoS: the Global Energy System (GES)	\$149,235
125868	Verification and Uncertainty Quantification of Climate Change Calculations	\$51,004
125870	Risk Mitigation in a National Emergency Response Infrastructure	\$385,480
125872	Soft Chemical Synthesis of Rare Earth-Lithium-Niobium/Tantalum Materials for Solid-State Lighting and Battery Applications	\$99,542
125882	Electroplating to Weld Mated Surfaces	\$97,476
125883	Computational Thermodynamics of Geosystems to Support the Energy and Natural Resources Mission	\$87,032

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Project ID	Project Name	FY Total
125884	Nanomanufacturing with SFIL: Modeling Fluid Mechanics of Step-and-Flash-Imprint Lithography over Large Areas	\$98,847
125885	Optimizing Wind Farm Design in Complex Topographies	\$53,340
125886	Variational Multiscale Methods	\$194,466
125887	A Convergent Computational Methodology for Simulating the Pervasive Dynamic Failure of Materials and Structures Using Random Voronoi Domain Tessellations	\$195,141
125888	Interfacial Science of Charge-Transfer Processes in Solid Oxide Electrochemical Cells	\$190,640
126611	Systems-Engineering Risk Assessment Methodology for Operating and Maintaining Biocontainment Laboratories	\$49,974
126612	Analysis of Nano-Crystalline Structures for Gamma Ray Detection	\$145,673
126613	Solid-Oxide Electrochemical Reactor Science	\$90,446
126614	High-Throughput Proteomics: State of the Art and New Optical Approaches	\$49,826
126615	Size Effects in Continuum Modeling	\$72,838
126626	Hyperspectral Imaging of Oil Producing Microalgae under Thermal and Nutritional Stress	\$105,703
126630	Investigating Frameworks for Application of Surety Methods to Reduce Development and Operational Risks of Cognitive Sciences and Technologies	\$99,996
126632	Affecting Domestic IED Supply Chains	\$99,205
126633	Community of Interest (COI) Information Sharing Parameterization Study	\$80,225
126678	Compact Wire Array Sources	\$99,007
126679	Tag Data Extraction from SAR	\$49,363
126680	95 GHz IED Defeat	\$98,341
126681	Ultra-High Dynamic Range FPA Circuit Architecture	\$82,761
126682	Active Optical Zoom for Automatic Rifles	\$98,974
126683	Enhanced Target Detection and Tracking for Staring Sensors	\$159,608
126749	Non-English Natural Language Processing	\$86,937
126750	Plasma Emission Model for EM-PIC Simulation of Electrode Plasmas	\$103,238
126751	Neutron-Irradiated GaAs PCSS for DC-Charged Trigger Systems	\$99,071
126752	Investigation of Multi-Layer Thin Films for Energy-Storage	\$97,150
126753	Completion and Enhancement of Automated Security Risk Tool	\$105,847

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
126795	Use of Ceragenins To Create Novel Biofouling Resistant Water-Treatment Membranes	\$87,694
126796	Plastic Optical Fiber Hydrogen Sensor	\$133,046
127737	Quantification of Uncertainty in Machining Operations for On-Machine Acceptance	\$68,453
127739	Advanced Fusing Concepts Technologies	\$60,654
127740	Bridging Scales from Ab Initio Models to Predictive Empirical Models for Complex Materials	\$58,613
127745	An Architecture for Attribution of Corporate Network Activities	\$167,812
127746	Post-Processed Circuit Integration of Commercial ASICS	\$91,622
127748	Hypervisor Architecture & Applications	\$99,869
127958	Solid-State Amplifier Using Radial Combining Techniques ? An Enabling Technology for Low-Cost, SAR-Based Precision Guidance for Munitions Applications	\$97,564
127959	Steganography Analysis and Development	\$229,719
128712	Nanotoxicity using Semiconductor Quantum Dots	\$93,677
129145	Feasibility Investigation of a Quantifiable and Objective Approach to Organizational Performance Enhancement	\$70,037
129297	Biodefense and Emerging Infectious Disease Collaborations with UTMB	\$272,759
129298	Synthesis of Shape- and Size-controlled Platinum and Platinum Alloy Nanostructures on Carbon with Improved Durability	\$96,451
129299	Laser Detection	\$73,810
129582	Fluctuating Hydrodynamics for Micro/Nano-fluidic Applications	\$74,460
129585	Electronic/Photonic Interfaces for Ultrafast Data Processing	\$96,893
129586	Using Emulation and Simulation to Understand Large-Scale Behavior of the Internet	\$136,644
129603	Capturing the Uncertainty in Adversary Attack Simulations	\$23,316
129604	General Design for Enabling Information Sharing	\$46,776
129605	Biomedical Diagnostics Science and Technology Assessment	\$45,754
129969	On-Demand Decon Systems Study (Radiological Decon)	\$36,183
129970	Small Space Object Imaging	\$94,549
129990	Rapidly and Temporarily Deployable VPED	\$47,917
129992	Cyber and Physical Infrastructure Interdependencies	\$38,608

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
130000	Homeland Security Risk-based Decision Frameworks	\$36,369
130020	Investigation of Biologically Designed Metal-Specific Chelators for Potential Metal Recovery and Waste Remediation Applications	\$47,799
130416	Megagauss Field Generation for High-energy-density Plasma Science Experiments	\$80,243
130417	Feasibility Study of Measuring the Temperature and Pressure of Warm Dense Matter	\$84,274
130418	Feasibility of Measuring Density and Temperature of Laser Produced Plasmas Using Spectroscopic Techniques	\$76,959
130419	Land-surface Studies with an Imaging Neutron Detector	\$39,328
130420	Plasmonic Enhanced Ultrafast Photoconductive Switch	\$26,151
131066	The Arctic as a Test Case for an Assessment of Climate Impacts on National Security	\$51,431
81752	Integrated Fiber Lasers for Efficient High-Power Generation	\$1,509,709
90493	Exploiting Interfacial Water Properties for Desalination and Purification Applications	\$280,472
93414	Minimally-Invasive Instrumentation of JTA End-Event	\$378,422
93415	A Modern Nuclear Weapon Communications Architecture	\$537,313
93416	Improved Power Source for Doubling the Exchange Time Interval of LLC	\$360,174
93417	Advanced Optical Trigger Systems	\$527,776
93422	Mentor/PAL	\$208,176
93423	Identification of Threats Using Linguistics-Based Knowledge Extraction	\$213,990
93492	In Situ Optical Diagnostics of Neutron Generator Target Films	\$298,485
93493	Low Cost, Meso-Scale Parts Fabricated from Nanocrystalline Metals	\$438,553
93495	Advanced Manufacturing of a Novel Functional Material	\$420,372
93496	Interface Physics in Microporous Media	\$526,703
93497	Creating a Discovery Platform for Defined-space Chemistry and Materials: Metal Organic Frameworks	\$496,013
93498	Virulence Membrane Protein Organization and Complex Formation in <i>Francisella novicida</i>	\$425,425
93499	Cell Modeling with Heterogeneous, Dynamic Cell Membranes	\$426,220
93501	Shotgun Protein Sequencing	\$295,894

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Project ID	Project Name	FY Total
93503	A Numerical And Experimental Characterization Of Decontaminating Water Distribution Networks	\$385,316
93505	Distributed Micro-releases of Bioterror Pathogens: Threat Characterization and Epidemiology from Uncertain Patient Observables	\$311,646
93506	Large Scale Simulation for Human Behavior Modeling	\$629,795
93507	Network Architecture Design for Next Generation Supercomputers	\$534,455
93508	Quantum Computer Architecture, Software, and Applications	\$686,018
93510	Robust Tunable Multifunction Amplifiers Using GaN and RF MEMS Technology	\$408,250
93511	Bloch Oscillations in Two-Dimensional Nanostructure Arrays for High Frequency Applications	\$423,460
93512	Inverted Monolithic Interconnected Module (MIM) Thermophotovoltaics (TPV) for Remote Power Generation	\$377,553
93513	A Discovery Platform for Nanowire Electronics and Photonics	\$400,194
93515	Miniature Flow Cytometer for Medical Diagnostics and Pathogen Detection	\$404,157
93521	Rapid Spectroscopy for Gas Cloud Analysis	\$338,593
93522	Developing Key Capabilities for Quantum Computing: Trapped Ion and GaAs Approaches	\$707,842
93525	Multi-Length Scale Algorithms for Failure Modeling in Solid Mechanics	\$373,839
93528	Nanocrystalline Aluminum Alloys for Structural Applications	\$426,224
93529	Nanoparticle Flow, Ordering and Self-Assembly	\$491,950
93531	Dynamic Compression of Synthetic Diamond Windows	\$338,576
93532	Fast High Voltage Spark Gap Switch With a Phase Changing Dielectric	\$449,945
93533	Development of a Physics Understanding of Pulsed Power Closing Switches for Multiple LTD Applications	\$400,721
93554	Hybrid Inorganic-organic Polymer Composites for Improved Performance in Polymer-electrolyte Fuel Cells	\$297,287
93555	Enhanced Biomass to Bioenergy Interconversion through Protein and Metabolic Engineering	\$588,090
93556	Joint Physical and Numerical Modeling of Water Distribution Networks	\$454,595
93558	Computational and Experimental Study of Nanoporous Membranes for Water Desalination and Decontamination	\$555,852
93559	Novel Virus Coagulants for Water Treatment and Biomolecular Structural Science	\$349,434

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Project ID	Project Name	FY Total
93561	A Demonstration of Advanced Transparency At The Monju Fast Breeder Reactor	\$365,861
93563	Water-splitting Nanodevices for Solar Hydrogen Production	\$435,464
93564	Development of Nanostructured and Surface Modified Semiconductors for Hybrid Organic-Inorganic Solar Cells	\$638,300
93565	Cognitive Modeling of Human Behaviors	\$501,230
93567	A Dual Neutron+Gamma Source for the Fissmat Inspection for Nuclear Detection (FIND) System	\$401,538
93569	Parallel Computing in Enterprise Modeling: A Hybrid Approach	\$503,717
93581	Enhanced Scintillation Detectors	\$321,159
93583	Plastic Neutron Detectors	\$267,973
93584	Scintillating Nanomaterials for New Radiation Detection Devices	\$449,256
93585	Explosives Detection by Photo-Ionization Ion Mobility Spectrometry	\$416,657
93592	Human Perceptory Augmentation	\$480,925
93593	Advanced Hard Target Warhead	\$688,767
93595	Human Performance Modeling for System of Systems Analytics	\$394,959
93596	Enabling Immersive Simulation for Complex Systems Analysis and Training	\$358,705
93601	High Energy Density for Electric Weapons Platforms	\$300,748
93605	The Physics of Threat/Target Interaction for Advanced Armor Development	\$418,256
93608	Photonics for Ultrawideband Intrasatellite Communications	\$400,588
93611	Micromechanical Resonators Applied to Shock Hardened, Covert Communications	\$453,766
93615	Monolithically Integrated, Backside-Illuminated Photo Diode Array	\$366,177
93617	Shear Horizontal Surface Acoustic Wave Microsensors for Class A Viral and Bacterial Detection	\$362,727
93623	Collaborative Situational Awareness in Network-Centric Warfare	\$371,546
93625	Strategic Concepts for Information Superiority	\$398,825
93633	New Hash Function for Data Protection	\$307,969
93636	Borazine Precursors for Boron Nitride anti Friction Coatings for MEMS	\$205,063
93637	Multi-Scale Behavioral Analyses of Integrated Surety Designs	\$359,858
93639	Remotely Interrogated Passive Polarizing Dosimeter (RIPPeD)	\$335,544

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SNL - Sandia National Lab

Project ID	Project Name	FY Total
94809	Rapid Manufacturing Innovations for Monitoring Systems	\$55,319
94811	Nanostructured Electrocatalyst for Fuel Cells: Silica Templated Synthesis of Pt/C Composites	\$29,843
94812	Piezoelectric Properties of Arrayed Nanostructures of Zinc Oxide for Sensor Applications	\$243,726
94814	Three-dimensional Analysis for Nanoscale Materials Science	\$242,578
95211	Highly Pixelated Hypertemporal Sensors for Global Awareness	\$3,058,045
95214	Terahertz Microelectronic Transceiver (T _μ T) System	\$2,954,530
95215	Microscale Immune Study Laboratory (MISL)	\$6,521,529
96088	Tunnel Gap Modulation Spectroscopy: An Ultrasensitive Technique for Measuring Small Mass Change	\$29,536
96299	Optical Properties of Plasmonic Metal-dielectric Composites	\$26,375
98105	Dynamics of Propagating Shock Waves and Phase Fronts	\$26,375
Total # of Projects for SNL:	421	Total Cost for SNL: \$145,878,201

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SRNL - Savannah River National Lab

Project ID	Project Name	FY Total
LD06-EM02-014	Advanced RNA and protein-based tools that enable use of microbial systems as in situ sensors	\$25,421
LD06-EM04-076	Advanced Spent Fuel Recycling Technology: Ionic Liquid Electrochemical Extraction	\$0
LD06-EM05-092	Low Temperature Waste Forms and Containment: Geopolymers vs. Hydroceramics vs. Steam Reformed Materials	\$3,394
LD06-ES01-008	Application of Strategic Glass Formulation and Heat Treatment Effects to Control Pore Size and Pore Size Distribution of HGMs	\$5,957
LD06-ES02-054	Systematic Evaluation of Hydrogen Production by Diverse Cyanobacterial and Green Algal Strains	\$812
LD06-GEN-018	Advanced Titanium-Based Sorbents and Applications for Their Use	\$0
LD06-NS04-030	Artificial Nose Technology: Fluorescent Labeled DNA Optical Sensor Arrays with Enhanced Sensitivity and Selectivity for Detection of Biological Agents	\$2,486
LD06-NS04-052	Detection of viral-size particles and nanomaterials in aerosols as surrogates for biological and chemical weapons.	\$3,215
LD06-NS04-080	Development of Nano-Scale, High-Efficiency Proportional Counters	\$-23,240
LDRD070040	Bimetallic Cathode Catalysts with High Utilization for PEMFC	\$121,809
LDRD070060	Stable Isotope Nitrogen-15 Production	\$137,982
LDRD070070	Real-Time Airborne Beryllium Particulate Monitor	\$130,489
LDRD070079	Radiotracer Method for Measuring Hydraulic Conductivity of Cementitious Materials	\$0
LDRD070081	In situ Generation of Oxygen Releasing Metal Peroxides	\$18
LDRD070092	Understanding Compositional and Kinetic Drivers for Nepheline Crystallization in High-Level Waste Glasses	\$165,310
LDRD070103	Separation of the Transuranic Actinides from the Lanthanides Using HDEHP	\$145,122
LDRD070105	High Performance Catalyst Support Materials for Fuel Cells	\$154,925
LDRD070114	Interfacial Transport and Catalyst Efficacy for Nanocatalyst-Embedded Ionomer Membranes	\$157,468
LDRD070116	Chemical Reactivity and Phase Behavior of the Pu-Zr System	\$132,089
LDRD070118	Nanostructured Anode Materials for Li-ion Rechargeable Batteries With High Capacity and Inherent Safety	\$143,158
LDRD070127	Structural Interactions of Hydrogen with Bulk Amorphous Microstructures in Metallic Systems: Understanding the Role of Partial Crystallinity on Permeation and Embrittlement	\$162,206

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SRNL - Savannah River National Lab

Project ID	Project Name	FY Total
LDRD070137	Enhanced Solid-State Neutron Detection Devices	\$130,433
LDRD070151	Advanced Spent Fuel Recycling Technology: Ionic Liquid Electrochemical Extraction	\$153,468
LDRD070158	Feasibility of Perfluorinated Liquids as Collection Media for Biodetection	\$337
LDRD070161	Neutron-Capture-Induced Irradiation of Polymers	\$-135
LDRD070177	Evaluation of potential side-effects of sequestering agents used for in-situ remediation of contaminants	\$0
LDRD070180	Life span of novel biopolymer sequestering agents for organic and inorganic contaminants	\$143,718
LDRD070181	Characterization of Volatile Components in Zircalloy Fuel Hulls	\$0
LDRD070182	Development of Hydrogen Compatible Ultra-Pure High-Strength Alloy Steels	\$98,014
LDRD070183	Carbon Nanotube Electrodes for Ultracapacitors	\$5,599
LDRD070195	Rate of Eutectic Formation in Plutonium/Stainless Steel Couples	\$72,759
LDRD070203	A System-level Evaluation of Interactions Between Hydrogen Producing Cyanobacteria and their Common Bacterial Associates	\$131,181
LDRD070211	Local Structural Environment Analysis of Plutonium and Neutron Absorbers in a Lanthanide Borosilicate Glass	\$10,183
LDRD070212	Systems Microbiology for Energy and the Environment: Structural and Functional Analysis of the Kineococcus radiotolerans genome.	\$113,250
LDRD070220	Optical modeling for proof of concept of a high finesse hemispherical lens cavity for use as a portable, hand-held, monolithic cavity ring-down spectrometer	\$2,454
LDRD070229	Novel Electrochemical Process for High Capacity Energy Storage	\$89,786
LDRD-QH-2008-014	Challenging Materials – Enhanced Storage, Monitoring and Stabilization Systems(QUICK HIT)	\$45,888
LDRD-QH-2008-024	Improving Operational Forecasts by Incorporation of Non-Standard Weather Data (QUICK HIT)	\$47,420
LDRD-QH-2008-042	National and Homeland Security: (1) Investigate innovative materials and methods for advanced device and/or detection technologies on the micro- or nano scale (QUICK HIT)	\$47,617
LDRD-QH-2008-063	Environmental Management: Waste Processing – Waste Pretreatment. reduce cost/schedule for HLW/LAW processing where ion exchange is used.(QUICK HIT)	\$43,864
LDRD-QH-2008-070	Waste Processing – Waste Pretreatment – Innovative materials for improved radiochemical and metal separations(QUICK HIT)	\$43,454

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Total # of Projects for SRNL:

41

Total Cost for SRNL:

\$2,647,911

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SRP - Savannah River Plant

Project ID	Project Name	FY Total
SR05027	Low Cost, High Flux Ni-Ti-Nb Hydrogen Purification/Separation Membrane Development	\$1,478
SR05029	Synthesis of Metal Hydrides by Mechanical Alloying at Elevated Temperatures in a High Speed Attritor	\$86,713
SR05047	Demonstration of Pressure Swing Adsorption (PSA) Separation Processes	\$6
SR07002	Compact ExB Mass Spectrometer for Hydrogen Isotopic Analysis	\$142,788
SR07005	Stainless Steel Surface Treatments for Mass Spectroscopy Systems	\$109,877
SR07006	Short Range Wireless Sensor Network for Hot Tritium Cell	\$228,728
SR07010	Safe Analysis of Tritiated Water from Glovebox Atmospheres and Solidification of the Tritiated Water for SRS Disposal	\$94,230
SR07011	Hydrogen Isotope Recovery Using a Proton Exchange Membrane (PEM) Electrolyzer	\$213,999
SR07047	Development of Multi-component Isotherms and Thermodynamic Models for Palladium	\$36,816
SR08001	Betavoltaics for Tritium Detection in Gaseous and Liquid Feed Streams	\$178,123
SR08003	Advanced Catalyst for Cracking and Recovery of Tritium Species - Non-noble Metal Membrane Reactor Technology	\$16,709
SR08004	Development of High Voltage Divider/High Resolution Focusing System for Finnigan MAT 271	\$38,744
SR08006	Accelerating Testing Methodology for Tritium Compatibility of Stainless Steel	\$250,685
SR08007	Non-contact Inspection Technology Development	\$30,194
SR08012	Development of a Prototype Non-noble Metal Diffuser	\$139,873
SR08016	Standalone Tritium Air Monitor System	\$23,542
Total # of Projects for SRP:	16	Total Cost for SRP: \$1,592,505

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Y-12 - Y-12 Plant

Project ID	Project Name	FY Total
Y1204045	Next Generation Microwave	\$146,544
Y1204137	Improving Machine Tool Productivity and Quality	\$87,892
Y1204138	Machining Uranium and Uranium Alloys	\$202,503
Y1205024	Methyl Chloroform Replacement	\$91,474
Y1205040	Large Alpha-Uranium Single Crystals	\$43,657
Y1205046	Metallographic Standardization	\$160,074
Y1205047	Purification by Drip Casting	\$96,562
Y1205048	Purification of Uranium by Electrefining	\$5,131
Y1205064	Pin Extensions	\$43,770
Y1205072	Nanostructured Super Material Machine Tools	\$100,761
Y1205086	Mechanical Properties of Uranium at Very High Temperatures	\$88,791
Y1205095	Primary Extraction System Improvements	\$29,247
Y1205099	Bioassay Analysis by ICP-MS	\$53,712
Y1206003	Light Beam Grid Network Safeguards Surveillance System	\$63,662
Y1206004	Advanced Modeling of Microwave Processes	\$28,555
Y1206011	Investigation of Welding and Weld Quality Issues of Uranium Components	\$126,645
Y1206019	Lithium Technologies	\$1,103,629
Y1206027	Swipe Analyzer	\$197,496
Y1206028	Portable Carbon in Uranium Analyzer	\$200,356
Y1206031	Advanced Methods to Nondestructively Sense for Stress Corrosion Cracking Sites on Uranium Parts Using a Thermoelectric Power (Seebeck) Coefficient Surface Contact Probe	\$210,794
Y1206033	Interface UT 3-D Imaging Technology with LC-SEM	\$167,286
Y1206036	Casting Mold Temperature Measurement	\$48,537
Y1206054	RFID and Automated Barcode Evaluation for NMC&A Modernized Facility	\$309,316
Y1206057	Advanced Infrared (IR) Heating Techniques for Materials Processing	\$520,835
Y1207002	Uranium Laser Welding Protocol for Laser Repair of Parts	\$1,146
Y1207003	Time resolved thermal profiling of the machining chip forming process	\$17,472
Y1207018	Dry Vacuum Holdup Monitor	\$329,149
Y1207019	Agile Machine Accountability System	\$10,978

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Y-12 - Y-12 Plant

Project ID	Project Name	FY Total
Y1207025	Alternative Forming Techn	\$176,990
Y1207030	Wrought-like Cast Uranium	\$420,309
Y1207037	Dimensional Metrology Process Development	\$154,993
Y1207045	Atomic Force Microscopy Study	\$164,115
Y1207046	Micro-Kjeldahl Digestion	\$102,610
Y1207047	Compatibility Study of Crucible Materials with Uranium	\$114,347
Y1207049	Optical Detection of Alpha Radiation	\$147,245
Y1207056	Enhancing and Maintaining the Ability to Roll and Form U Metal Alloys	\$275,852
Y1207058	Optimization of Welding Through Computer Modeling and Simulation	\$137,572
Y1207065	Advanced Registration and Segmentation of Computed Tomographic Data	\$329,734
Y1207071	Radioactive Contamination Visual Identification & Control	\$225,726
Y1207076	Dense, Interim Uranium Storage Forms	\$81,742
Y1207082	Recovery of Uranium Via Electrosorption & Ionic Exchange	\$168,069
Y1207085	Small Volume Calibration Method and Apparatus	\$2,311
Y1207111	Thermo-Physical Property Measurement	\$29,251
Y1207118	Thermal Conversion of Uranium Oxide	\$100,052
Y1207120	Chalcopyrite Radiation Detectors	\$81,249
Y1207122	Automatic Part Transfer	\$140,459
Y1208003	Surface Particulate Cleaning	\$258,762
Y1208022	Gasket Material Selection	\$79,210
Y1208026	Non-contact Inspection Collaboration with Savannah River Site	\$241,713
Y1208042	Nondestructive Metallography in the LCSEM	\$28,191
Y1208044	Lithium Specific Resin	\$38,809
Y1208054	Robotic Welding	\$79,881
Y1208073	Machining Science	\$789,274
Y1208077	Improved Dissolution Systems	\$177,689
Y1208080	Solidification Organic Treatment	\$48,628
Y1208081	Electrorefining of U Alloy	\$355,208
Y1208086	High Temp Dilatometer Thermal Studies	\$156,333

United States Department of Energy
Laboratory, Plant or Site Directed Research and Development Report
Project List -- Fiscal Year 2008

Y-12 - Y-12 Plant

Project ID	Project Name	FY Total
Y1208087	Casting Crucible Improvement	\$325,885
Y1208107	Laser and Machine Marking	\$31,084
Y1208125	ThermoMechanical Analysis	\$232,675
Y1208141	Heterogeneous Materials Characterization Methodologies	\$136,543
Y1208144	Part Storage Controls	\$756,042
Y1208146	Hydrogen in Metals	\$660,223
Y1208147	SMO Improved Machining	\$92,891
Y1208148	Metal Process Models	\$202,982
Y1208152	Agile Technologies	\$1,463,489
Y1208154	Electrochemical Processing	\$153,182
Y1208156	Joining Technology Improvements	\$402,072
Y1208157	Alternative Forming Technology	\$371,363
Y1208158	Wireless Demonstration	\$306,331
Y1208160	Chip Processing Improvements	\$252,111
Y1208161	Infrared Debonding	\$110,887
Y1208162	Advanced Structural Dynamics	\$461,314
Y1208164	TurboFrisking Mitigation Device	\$81,972
Y1208165	Uranium University	\$22,104
Y1208166	Wall Design Evaluation	\$54,481
Y1208167	ServoPress 150	\$701,718
Y1208168	NMR	\$406,359
Y1208169	Mill and Lathe	\$253,683
Total # of Projects for Y-12:	79	Total Cost for Y-12: \$17,071,689



Department of Energy
Washington, DC 20585

MAR 24 2009

The Honorable Daniel K. Inouye
Chairman, Committee on Appropriations
United States Senate
Washington, DC 20510

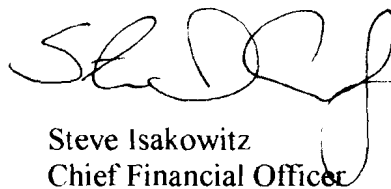
Dear Mr. Chairman:

As requested in the fiscal year (FY) 2001 Energy and Water Development Appropriations Conference Report (H.R. 106-988), enclosed is the Department of Energy's (DOE's) FY 2008 Report on Laboratory Directed Research and Development (LDRD). This report provides a detailed project history of LDRD activities, as well as information on the funding levels and the impact and importance of the program in advancing the diverse missions of the Federal government.

In FY 2008, DOE National Laboratories devoted approximately \$513 million to LDRD in 1,707 projects. Also, included is information on DOE's Plant Directed Research, Development and Demonstration and Site Directed Research, Development and Demonstration programs.

Departmental representatives are available to discuss any questions you may have regarding the information included in this report. If you have questions, please contact me on (202) 586-4171 or Ms. Betty Nolan, Senior Advisor for Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,



Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable Thad Cochran
Ranking Member



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Department of Energy

Washington, DC 20585

MAR 24 2009

The Honorable Byron L. Dorgan
Chairman, Subcommittee on Energy
and Water Development
Committee on Appropriations
United States Senate
Washington, DC 20510

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Sincerely,

A handwritten signature in black ink, appearing to read "SE Isakowitz", is positioned above the printed name.

Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable Robert F. Bennett
Ranking Member



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Department of Energy
Washington, DC 20585

The Honorable Carl Levin *MAR 24 2009*
Chairman, Committee on Armed Services
United States Senate
Washington, DC 20510

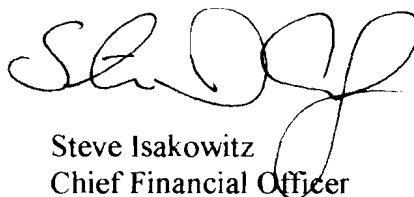
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Sincerely,



Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable John M. McCain
Ranking Member



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Department of Energy

Washington, DC 20585

MAR 24 2009

The Honorable Ike Skelton
Chairman, Committee on Armed Services
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

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Sincerely,

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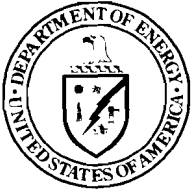
Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable John McHugh
Ranking Member



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Department of Energy
Washington, DC 20585

MAR 24 2009

The Honorable David R. Obey
Chairman, Committee on Appropriations
U.S. House of Representatives
Washington, DC 20515

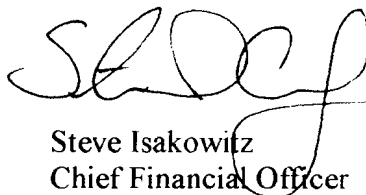
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Sincerely,



Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable Jerry Lewis
Ranking Member



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Department of Energy
Washington, DC 20585

MAR 24 2009

The Honorable Peter J. Visclosky
Chairman, Subcommittee on Energy
and Water Development, and Related Agencies
Committee on Appropriations
U.S. House of Representatives
Washington, DC 20515

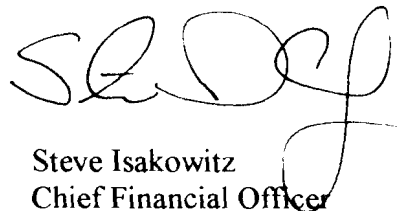
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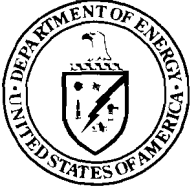
Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable Rodney P. Frelinghuysen
Ranking Member



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Department of Energy
Washington, DC 20585

MAR 8 1 2009

The Honorable Jeff Bingaman
Chairman, Committee on Energy
and Natural Resources
United States Senate
Washington, DC 20510

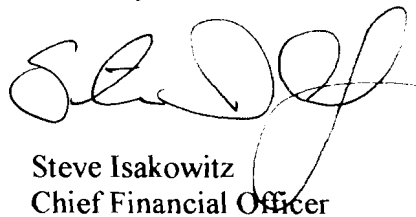
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Sincerely,



Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable Lisa Murkowski
Ranking Member



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Department of Energy
Washington, DC 20585

MAR 24 2009

The Honorable Bart Gordon
Chairman, Committee on Science
and Technology
U.S. House of Representatives
Washington, DC 20515

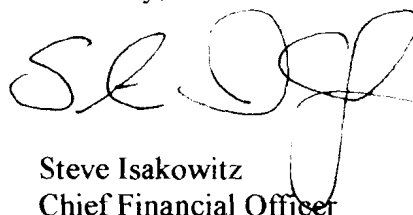
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Sincerely,



Steve Isakowitz
Chief Financial Officer

Enclosure

cc: The Honorable Ralph M. Hall
Ranking Member



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Identical letters sent to:

The Honorable Daniel K. Inouye
Chairman, Committee on Appropriations
United States Senate
Washington, DC 20510
cc: The Honorable Thad Cochran
Ranking Member

The Honorable Byron L. Dorgan
Chairman, Subcommittee on Energy
and Water Development
Committee on Appropriations
United States Senate
Washington, DC 20510
cc: The Honorable Robert F. Bennett
Ranking Member

The Honorable Carl Levin
Chairman, Committee on Armed Services
United States Senate
Washington, DC 20510
cc: The Honorable John M. McCain
Ranking Member

The Honorable Ike Skelton
Chairman, Committee on Armed Services
U.S. House of Representatives
Washington, DC 20515
cc: The Honorable John McHugh
Ranking Member

The Honorable David R. Obey
Chairman, Committee on Appropriations
U.S. House of Representatives
Washington, DC 20515
cc: The Honorable Jerry Lewis
Ranking Member

The Honorable Peter J. Visclosky
Chairman, Subcommittee on Energy
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Committee on Appropriations
U.S. House of Representatives
Washington, DC 20515
cc: The Honorable Rodney P. Frelinghuysen
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And Technology
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cc: The Honorable Lisa Murkowski
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